East Central Florida
Severe Weather Climatology

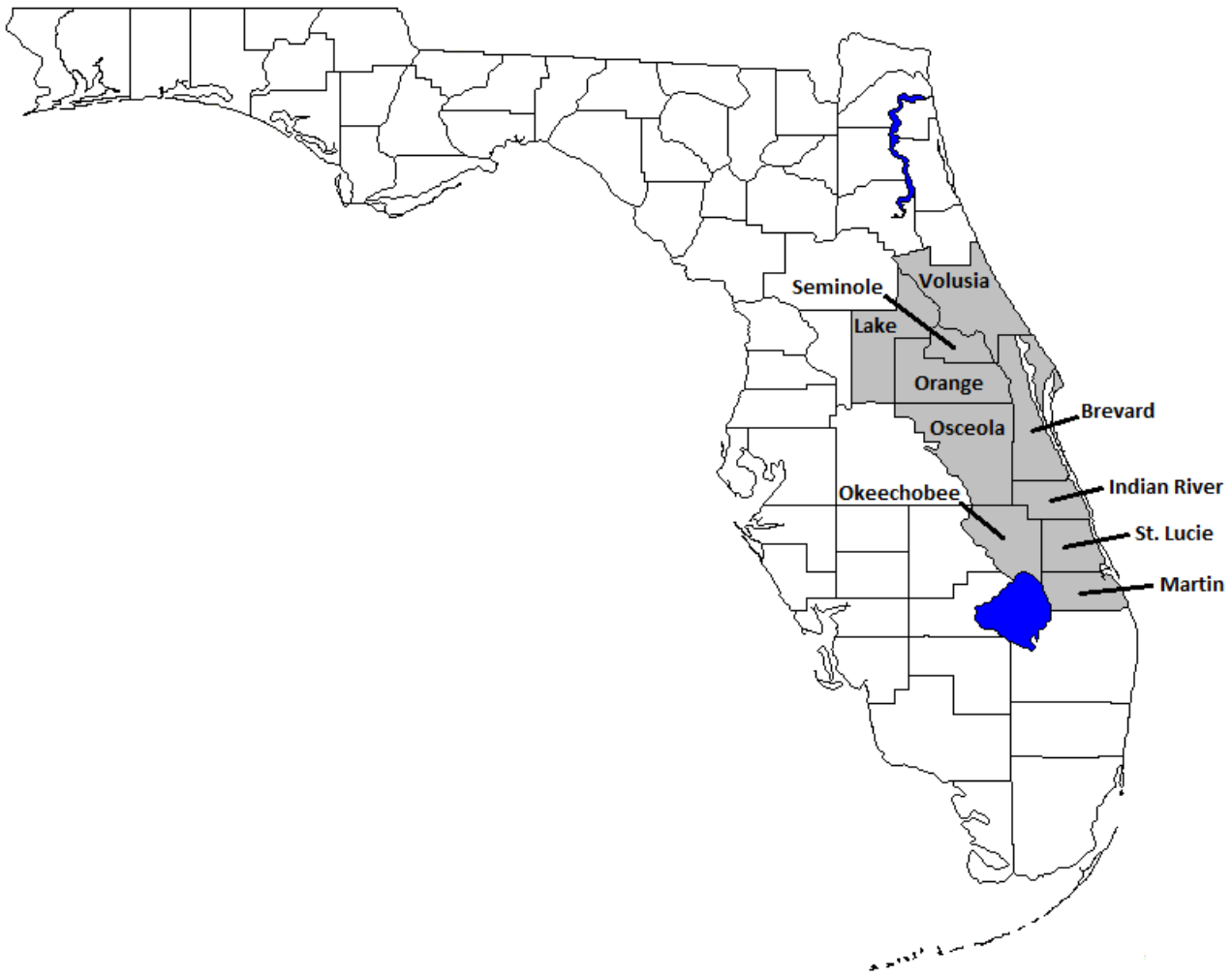
Jonathan Guseman

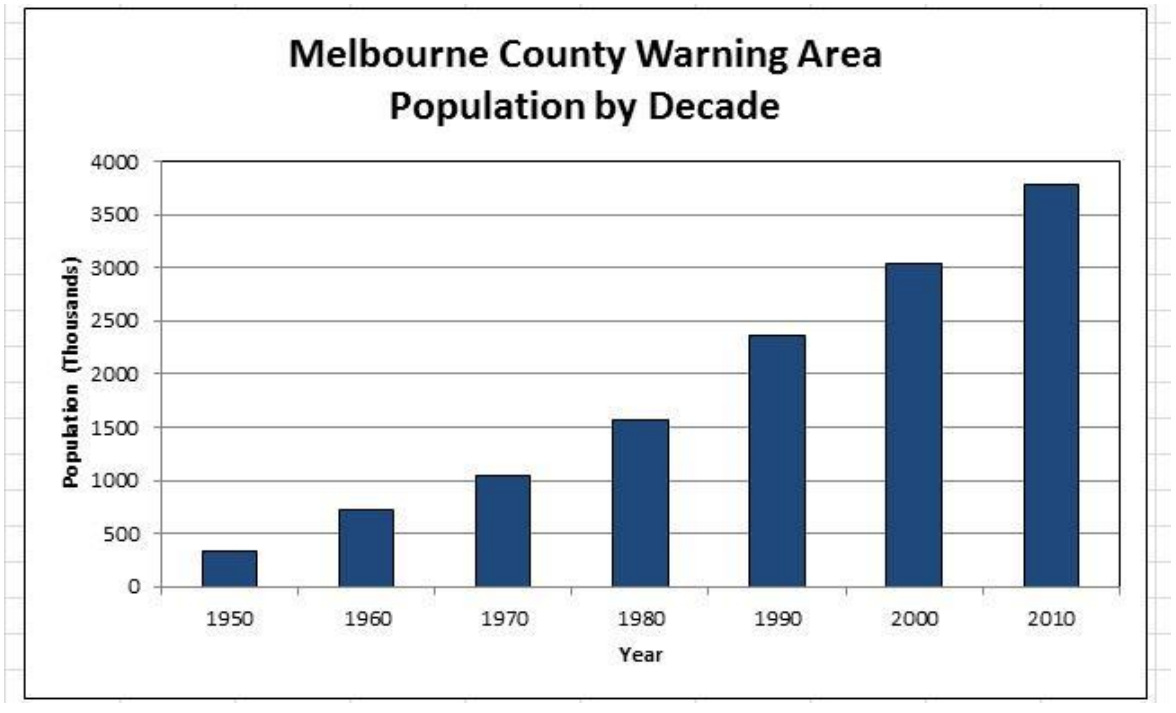
The purpose of this document is to graphically depict and analyze all documented severe weather occurrences across the National Weather Service (NWS) Melbourne, Florida County Warning Area (CWA). The data presented within this document were taken from the *Storm Data* archive[1]. Tornado data are documented for the period 1950-2010, while hail and wind data cover the period 1955-2010.

Hail reports are included for stones of penny size (3/4") diameter or greater, and wind reports contain events where convective wind gusts reached 58 mph or greater. Tornadoes are ranked in accordance with the (enhanced) Fujita Scale (0-5). The tornado graphs and charts do not include F5s since there has never been a documented event of this magnitude within East Central Florida. It is important to remember that these graphs and charts do not represent every severe weather event which has occurred within East Central Florida, since many events have undoubtedly taken place in unpopulated areas or have gone unreported[2]. The NWS Forecast Office in Melbourne opened in 1989, so this likely explains the rapid increase of hail and wind reports after this time period.

The first section of this document shows an area-wide climatology, encompassing events across all of East Central Florida. The second section provides a county specific climatology for each of the ten counties in the NWS Melbourne CWA.

Melbourne County Warning Area

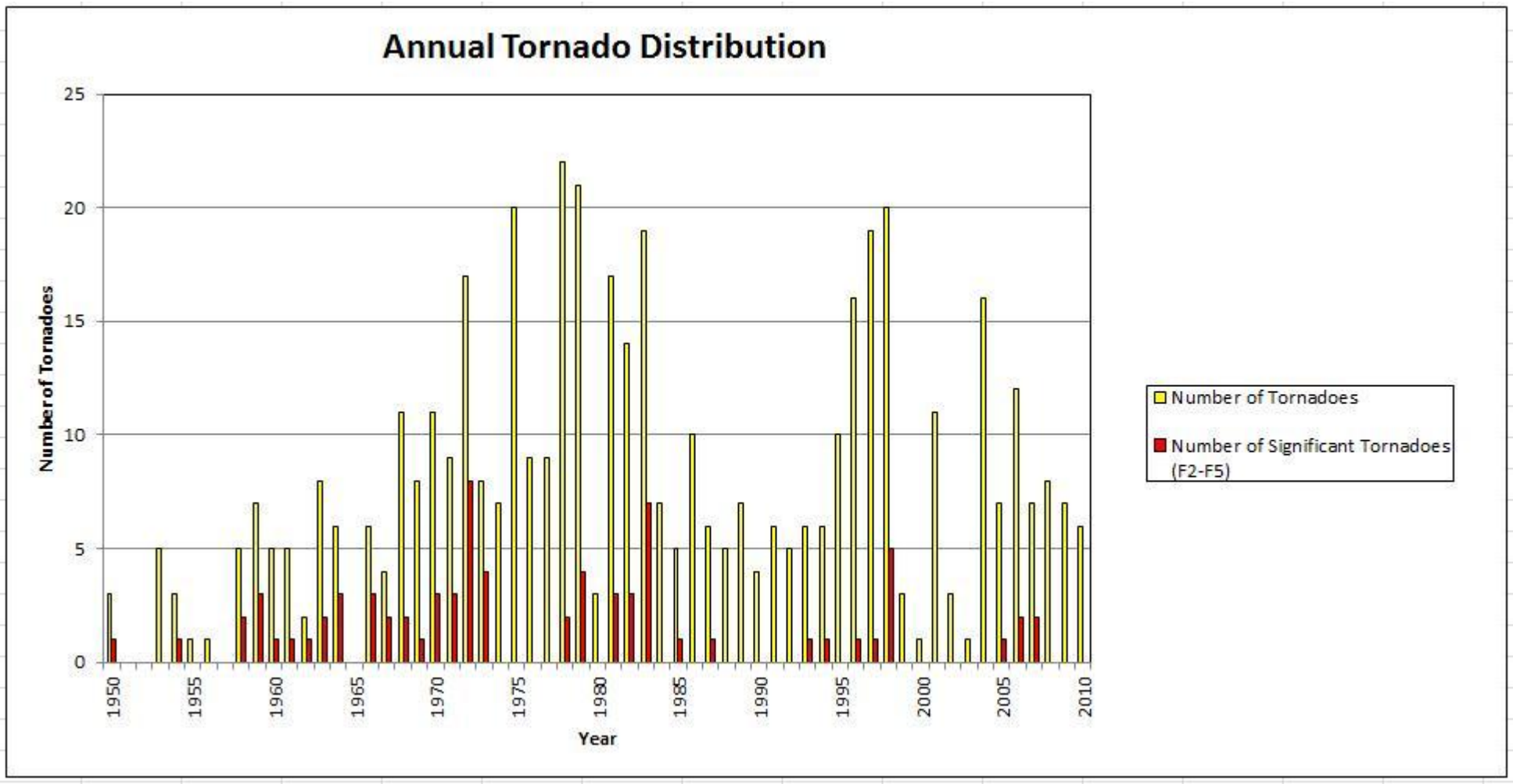


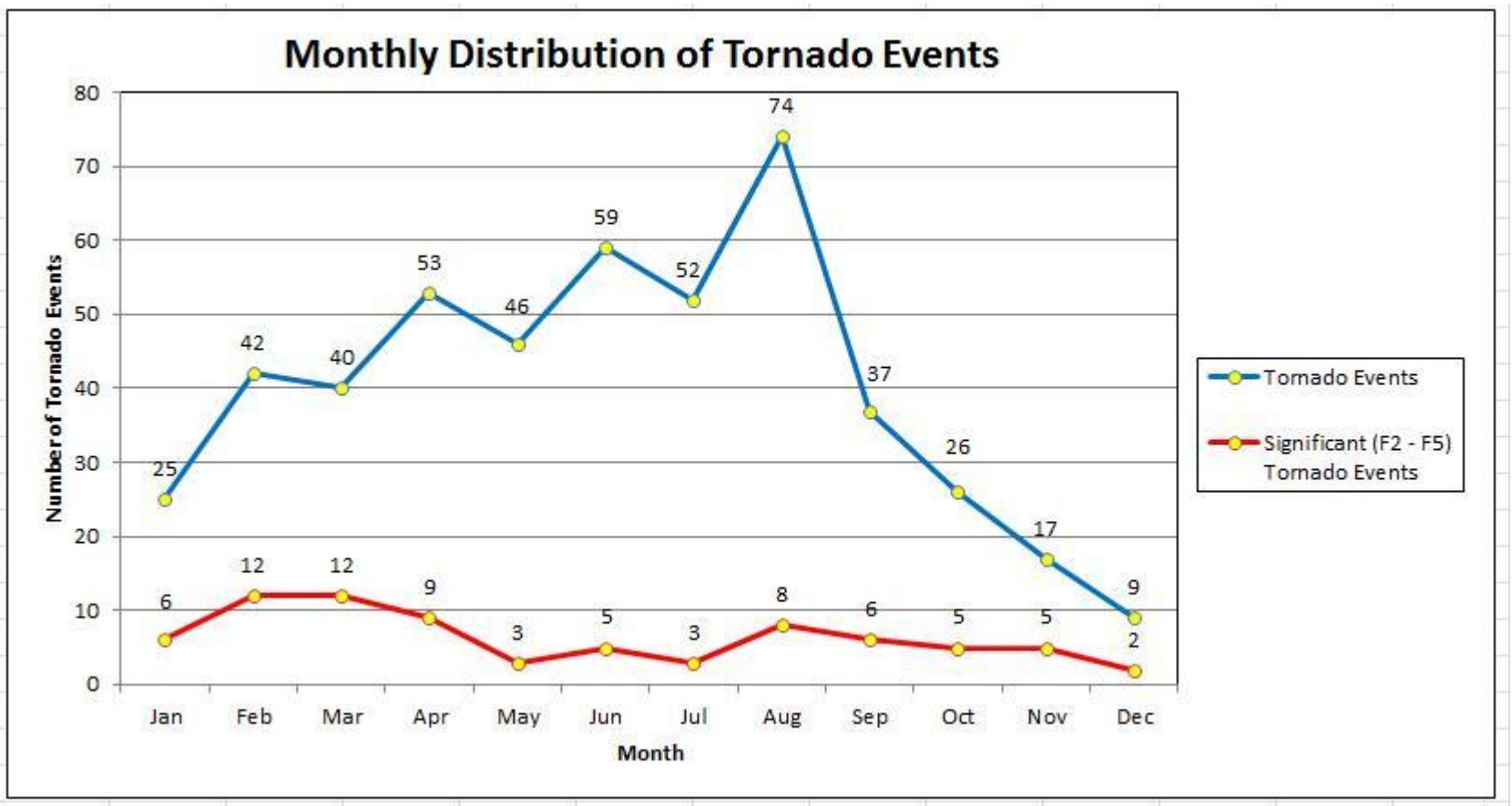


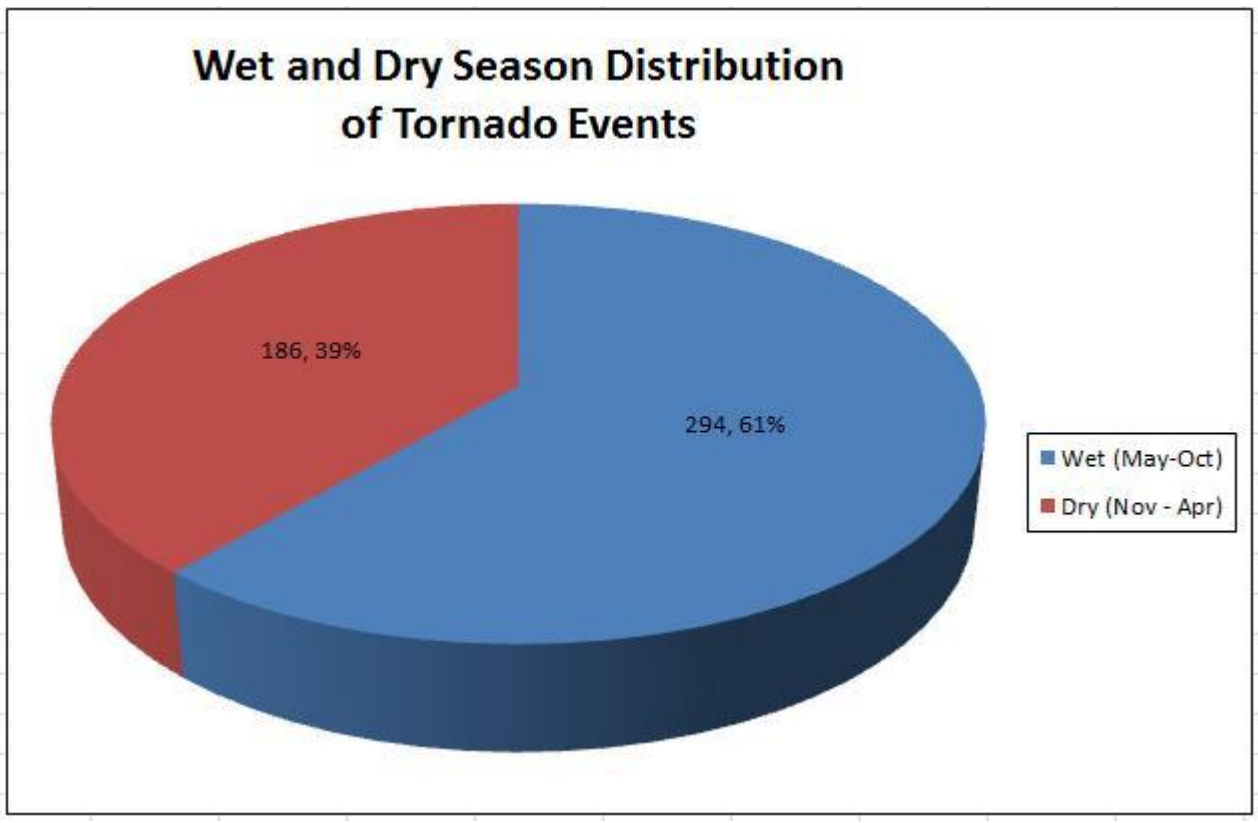
[1]All provided meteorological data were taken from the *Storm Data* archive available at: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms – The data can also be found in a yearly compiled format from the *Severe Weather Database Files (1950-2010)* available at: http://www.spc.noaa.gov/wcm/

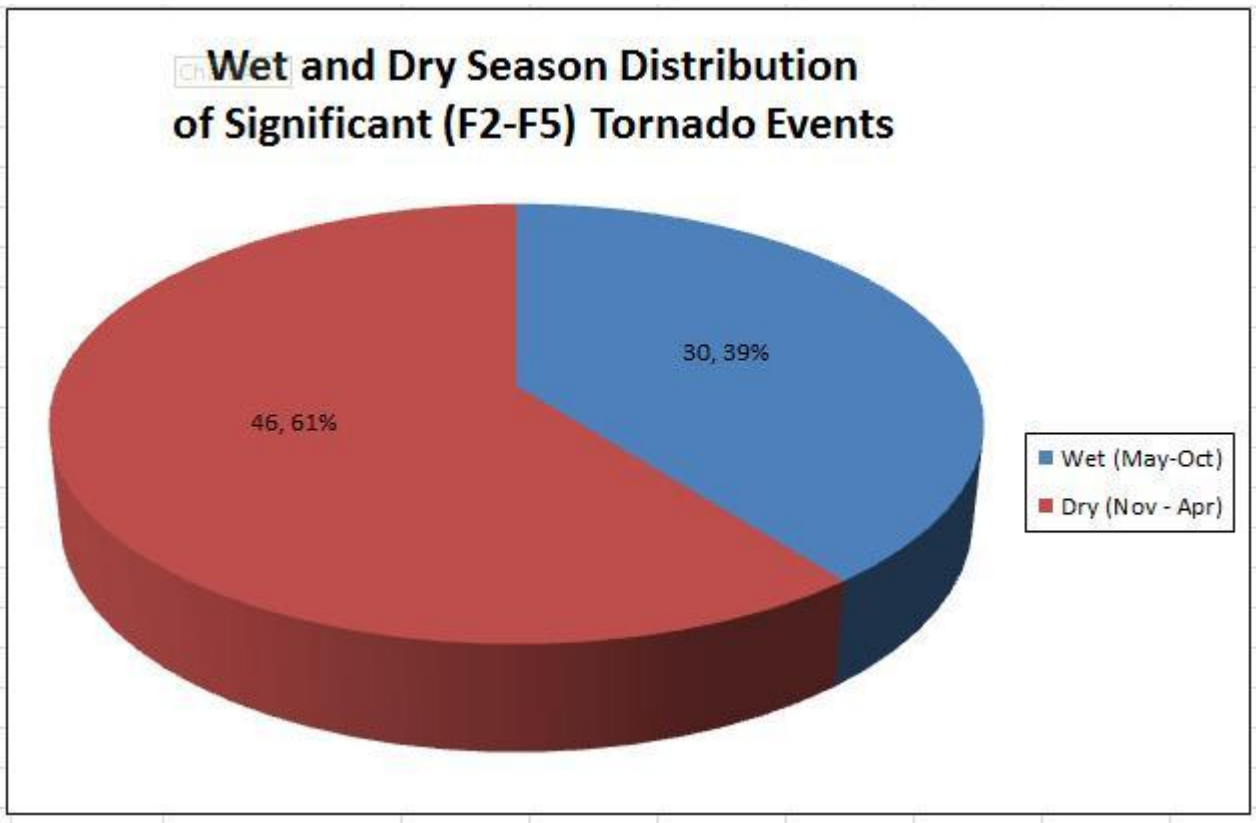
[2]Census data was provided by the U.S. Census Bureau available at: http://www.census.gov/

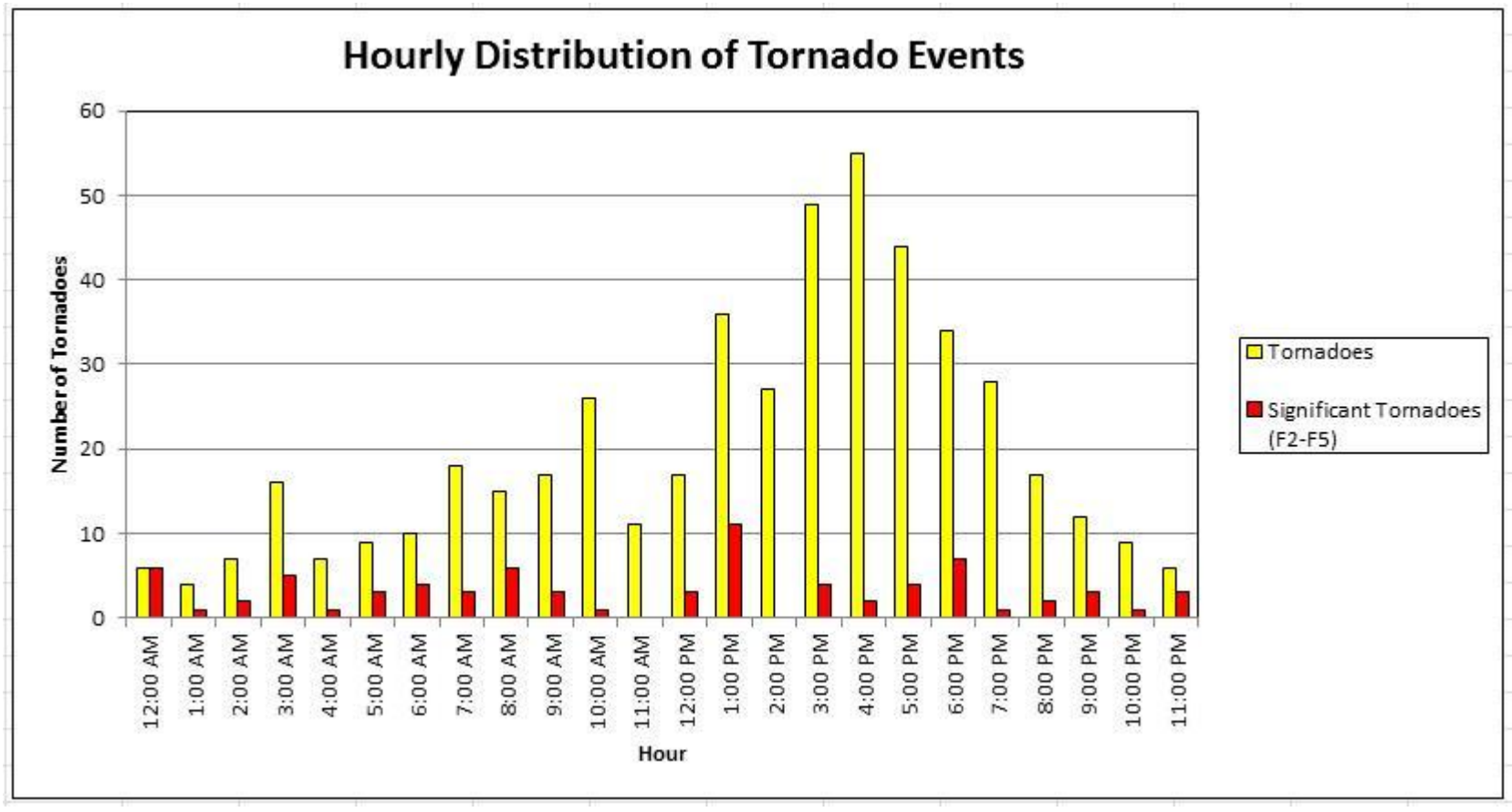
Melbourne County Warning Area Climatology

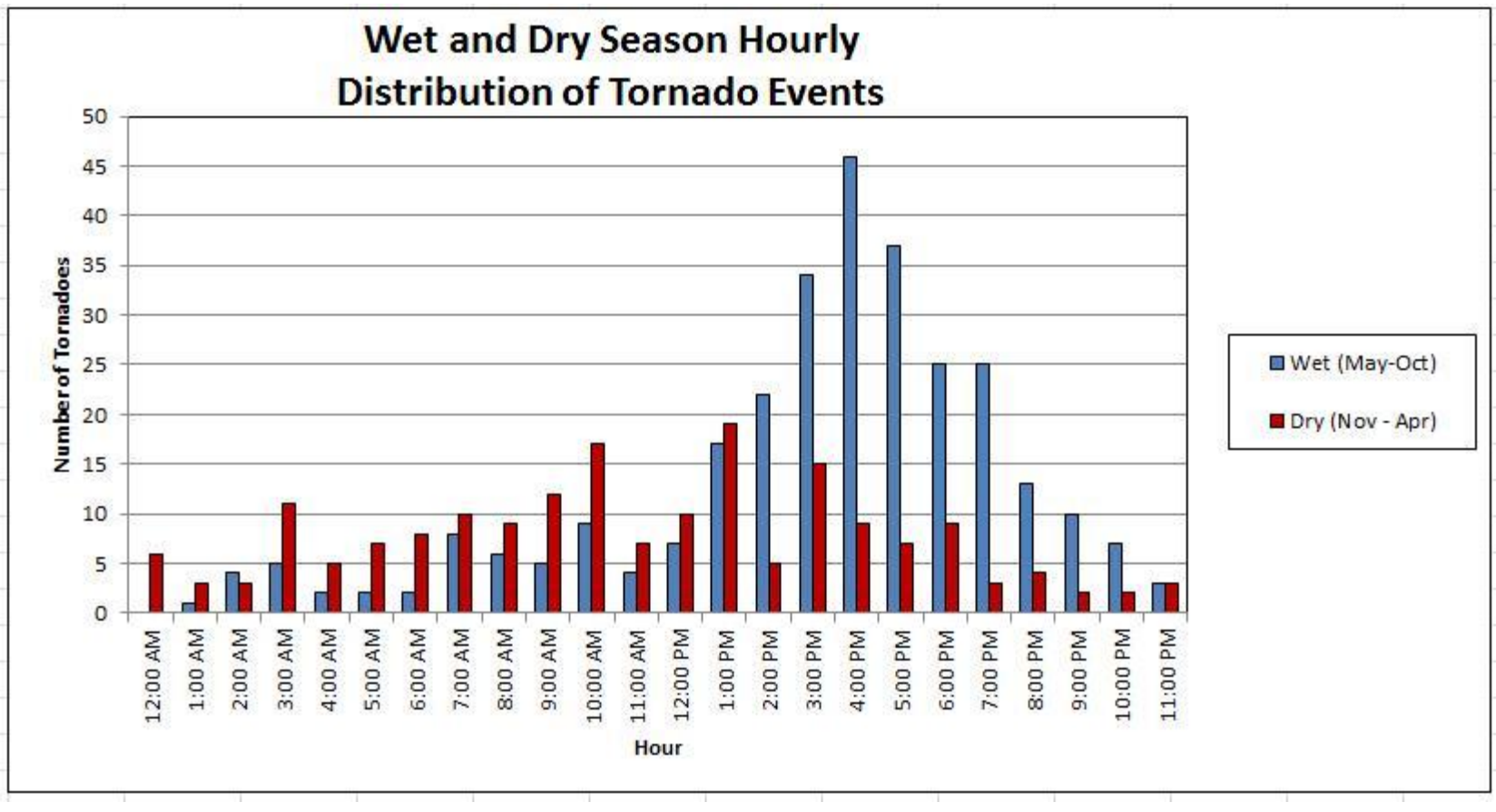


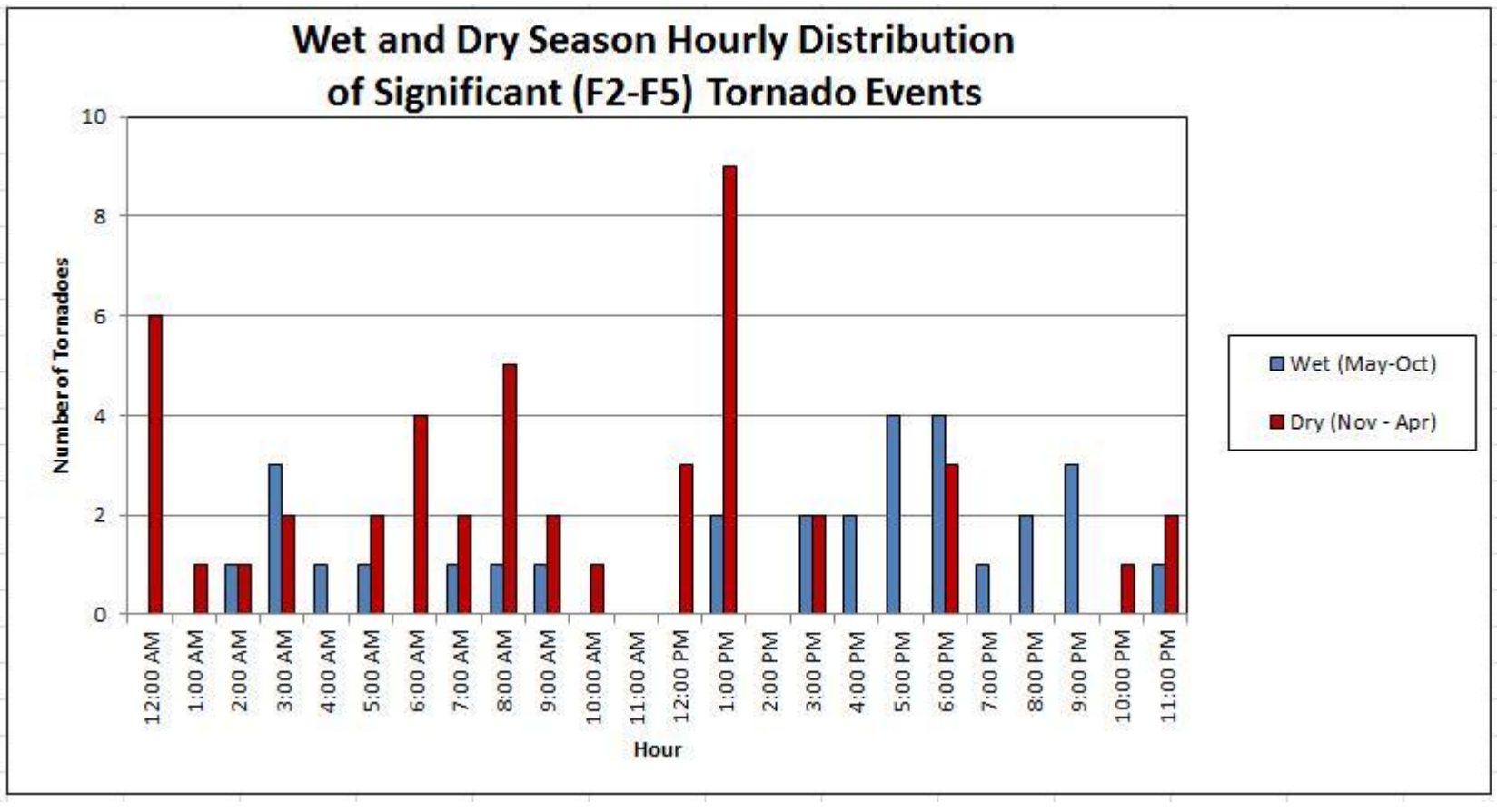


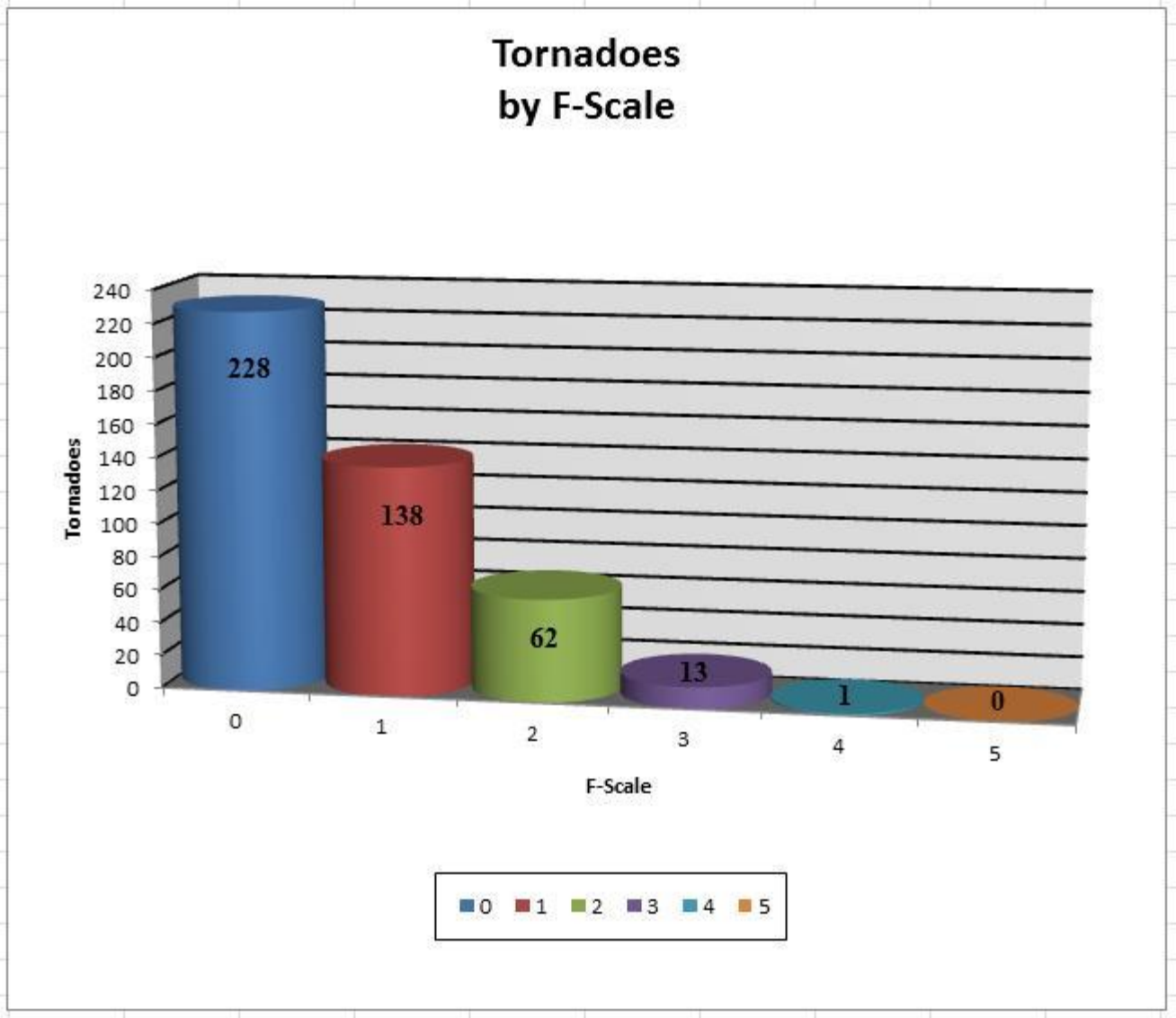

Wet and Dry Season Distribution
of Tornado Events
186, 39%
294, 61%
Wet (May-Oct)
Dry (Nov - Apr)

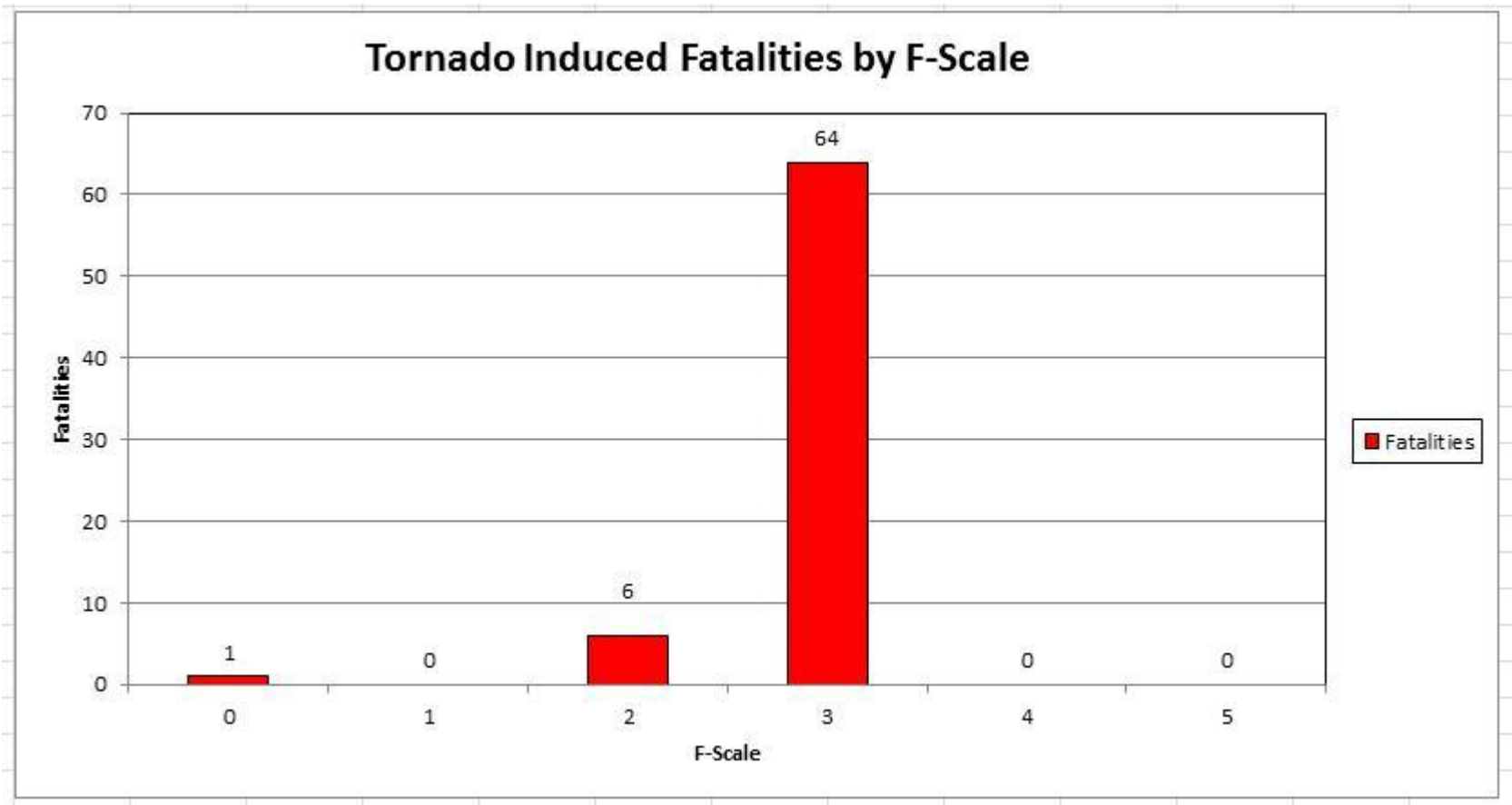

Wet and Dry Season Distribution
of Significant (F2-F5) Tornado Events
30, 39%
46, 61%
Wet (May-Oct)
Dry (Nov - Apr)

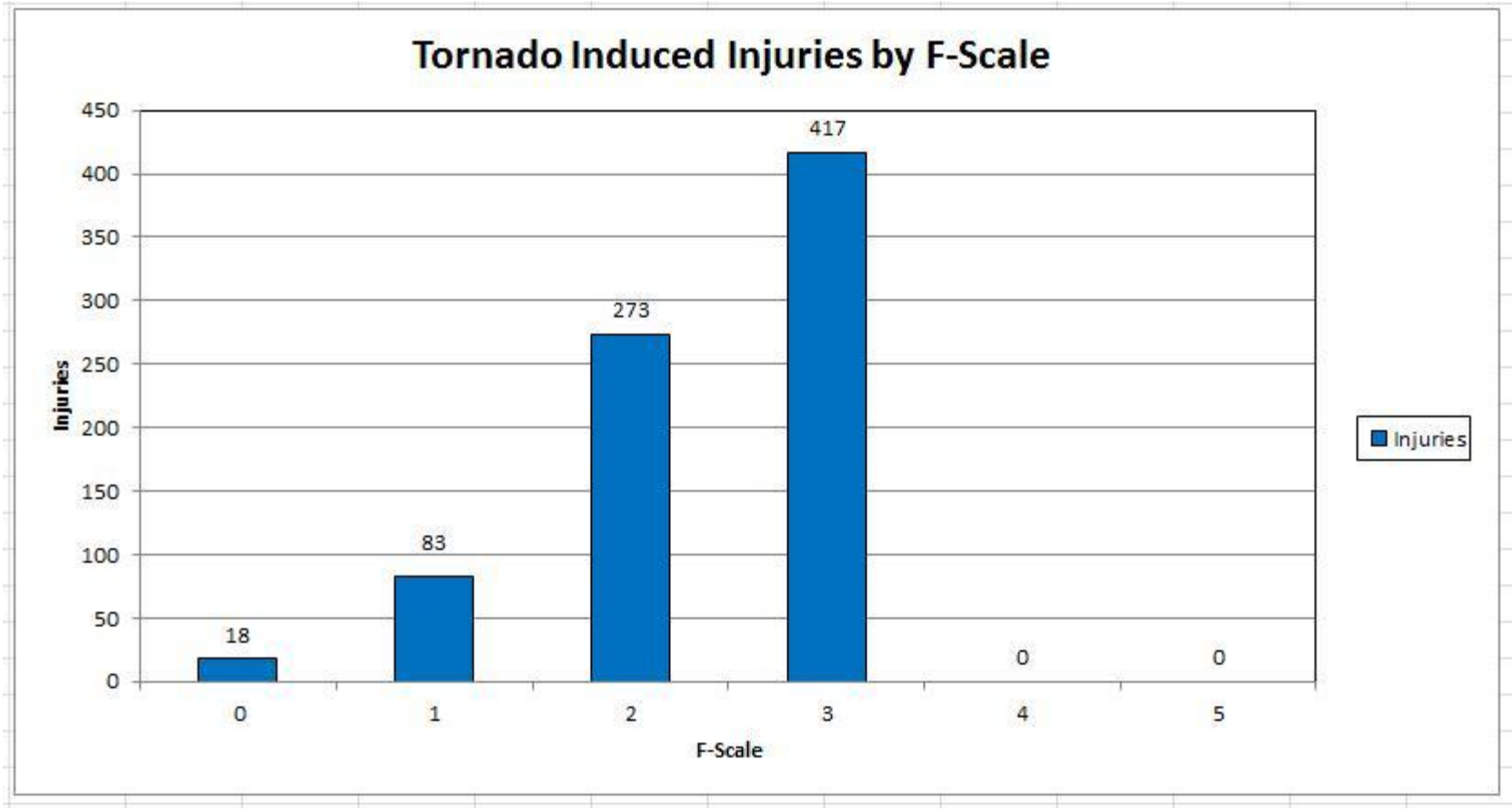

Hourly Distribution of Tornado Events
Number of Tornadoes
60
50
40
30
20
10
0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
Hour
Tornadoes
Significant Tornadoes (F2-F5)

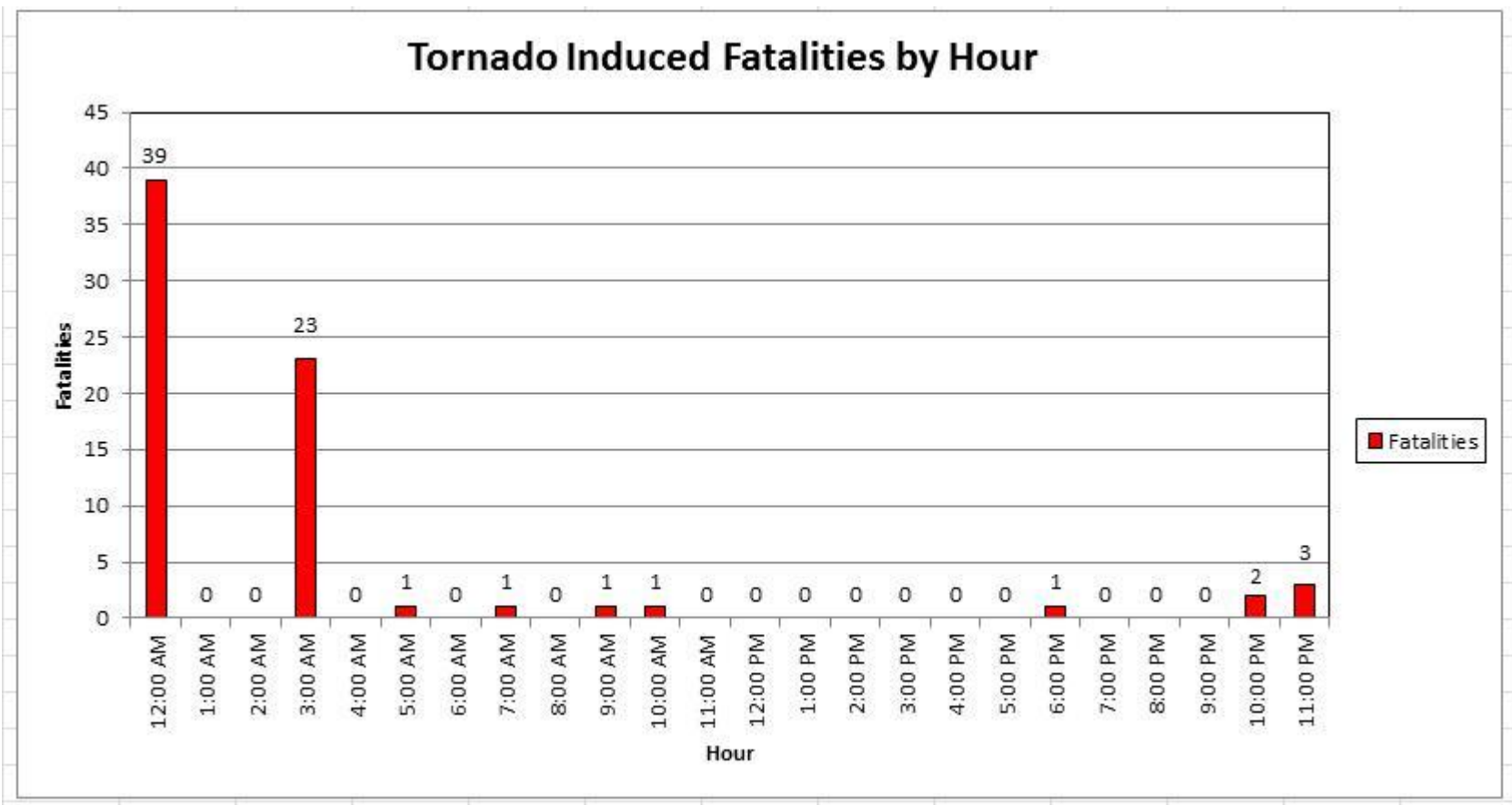

Wet and Dry Season Hourly Distribution of Tornado Events
Number of Tornadoes
50
45
40
35
30
25
20
15
10
5
0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
Hour
Wet (May-Oct)
Dry (Nov - Apr)

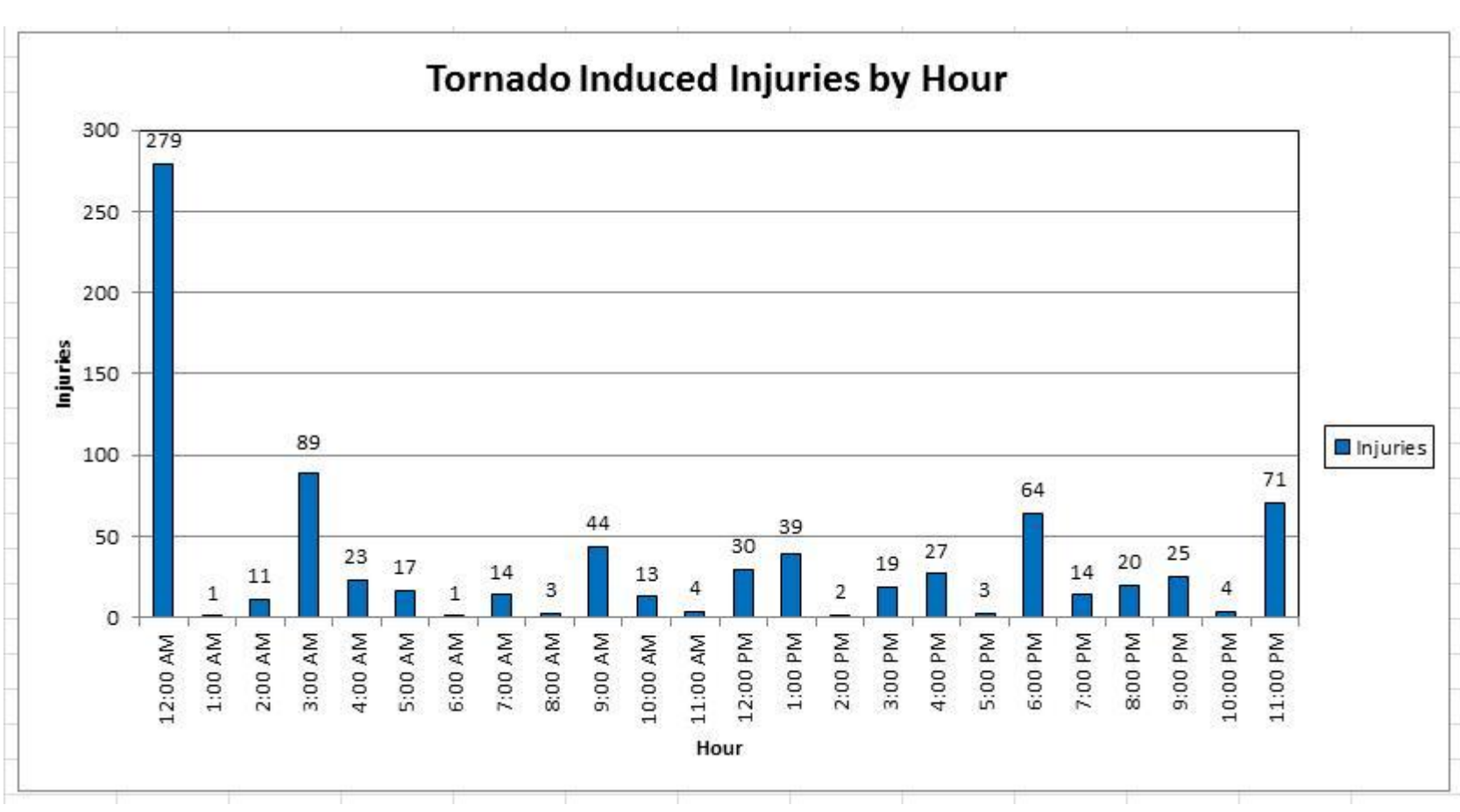

Wet and Dry Season Hourly Distribution of Significant (F2-F5) Tornado Events
Number of Tornadoes
10
8
6
4
2
0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
Hour
Wet (May-Oct)
Dry (Nov - Apr)

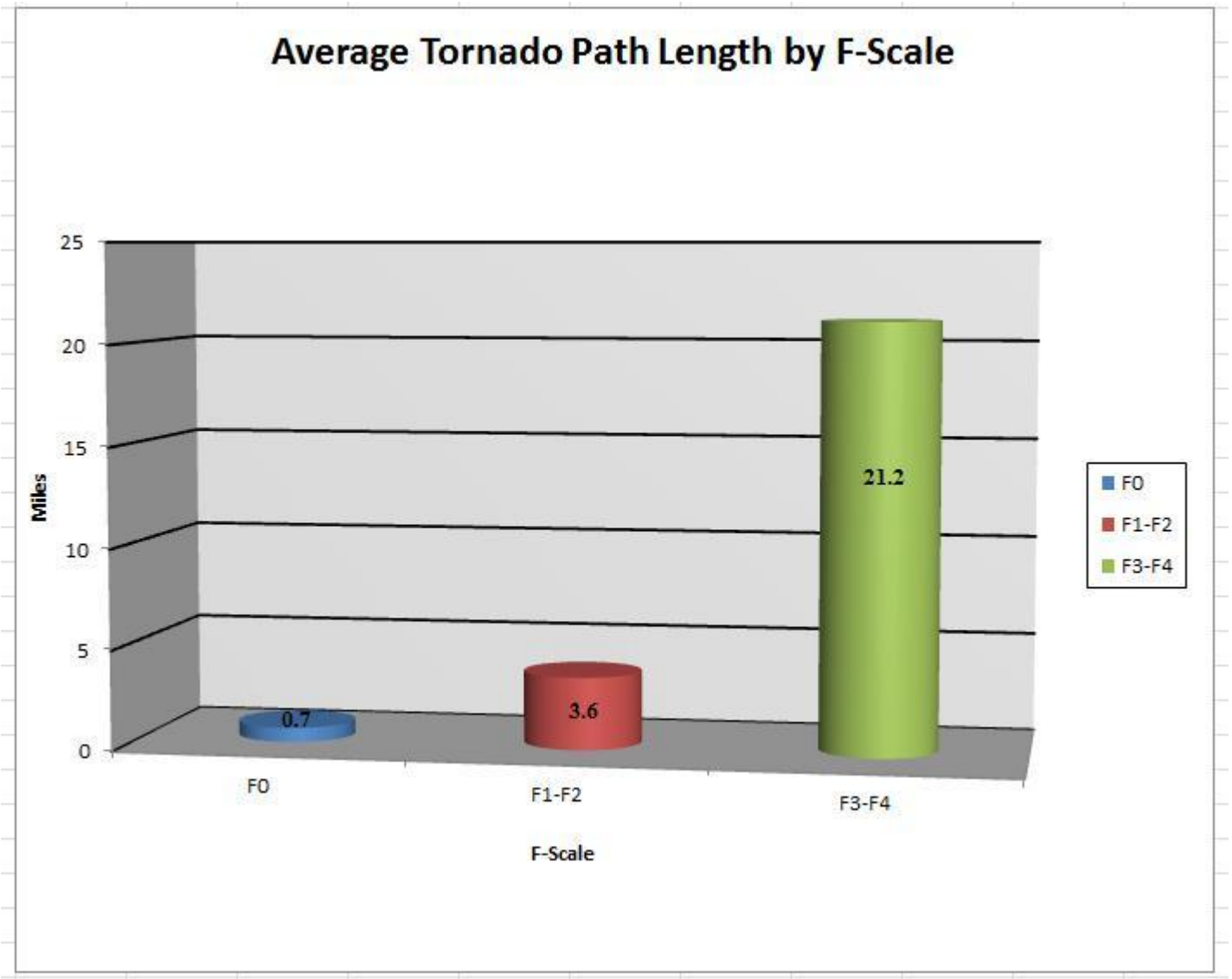

Tornadoes
by F-Scale
Tornadoes
240
220
200
180
160
140
120
100
80
60
40
20
0
228
138
62
13
1
0
0
1
2
3
4
5
F-Scale
0 1 2 3 4 5

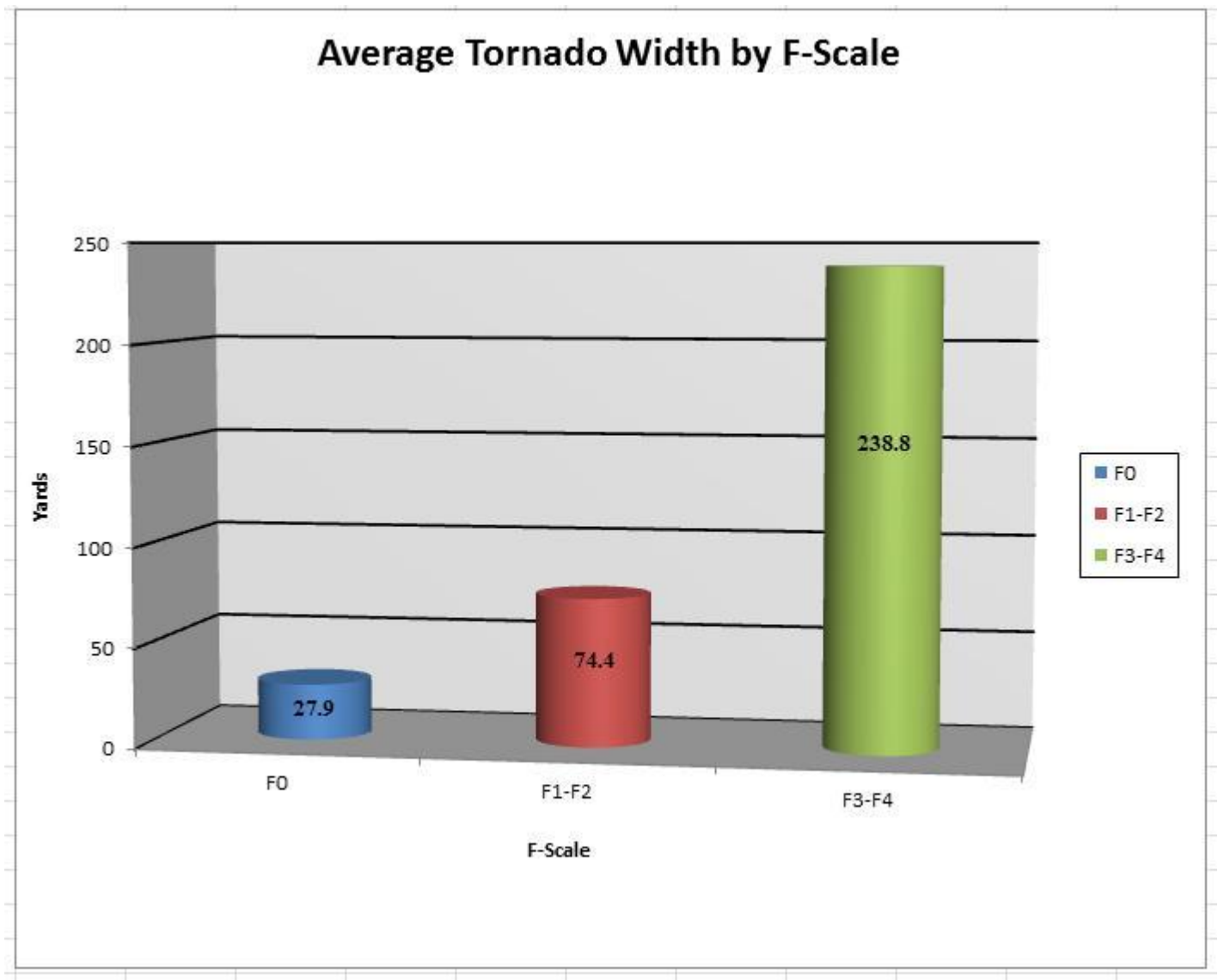

Tornado Induced Fatalities by F-Scale
Fatalities
70
60
50
40
30
20
10
0
1
0
6
64
0
0
0
1
2
3
4
5
F-Scale
Fatalities


Tornado Induced Injuries by F-Scale
Injuries
450
400
350
300
250
200
150
100
50
0
18
83
273
417
0
0
0
1
2
3
4
5
F-Scale
Injuries


Tornado Induced Fatalities by Hour
Fatalities
45
40
35
30
25
20
15
10
5
0
39
0
0
23
0
1
0
1
0
1
1
0
0
0
0
0
0
0
1
0
0
0
2
3
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
Hour
Fatalities

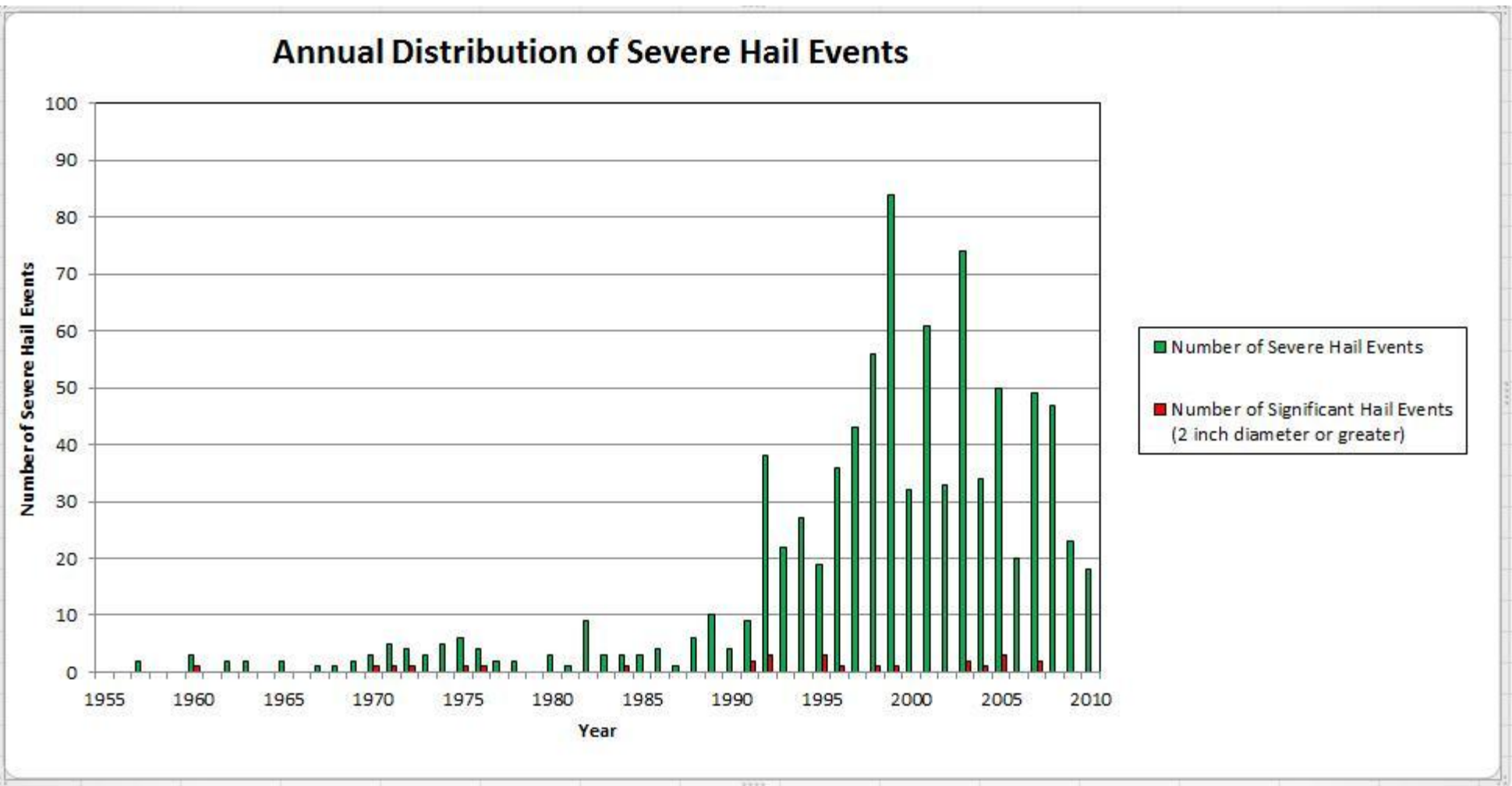

Tornado Induced Injuries by Hour
Injuries
300
250
200
150
100
50
0
279
1
11
89
23
17
1
14
3
44
13
4
30
39
2
19
27
3
64
14
20
25
4
71
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
Hour
Injuries



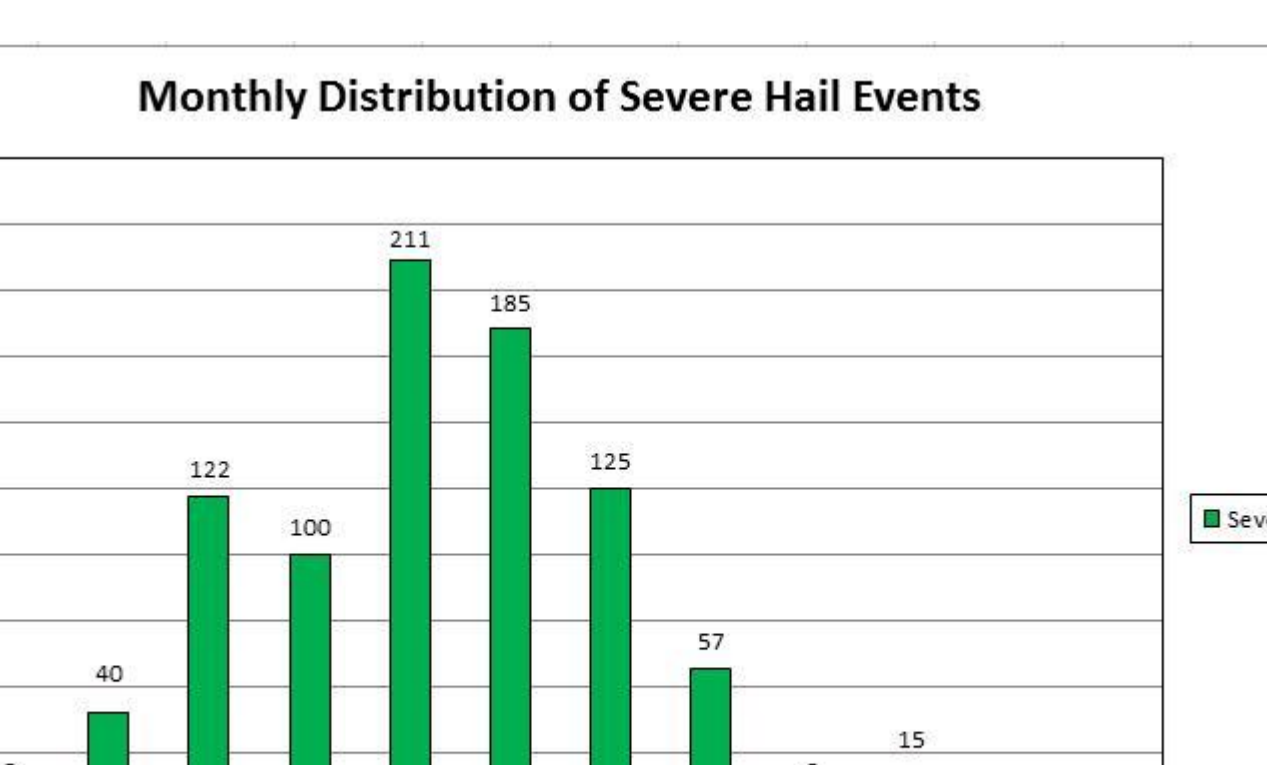


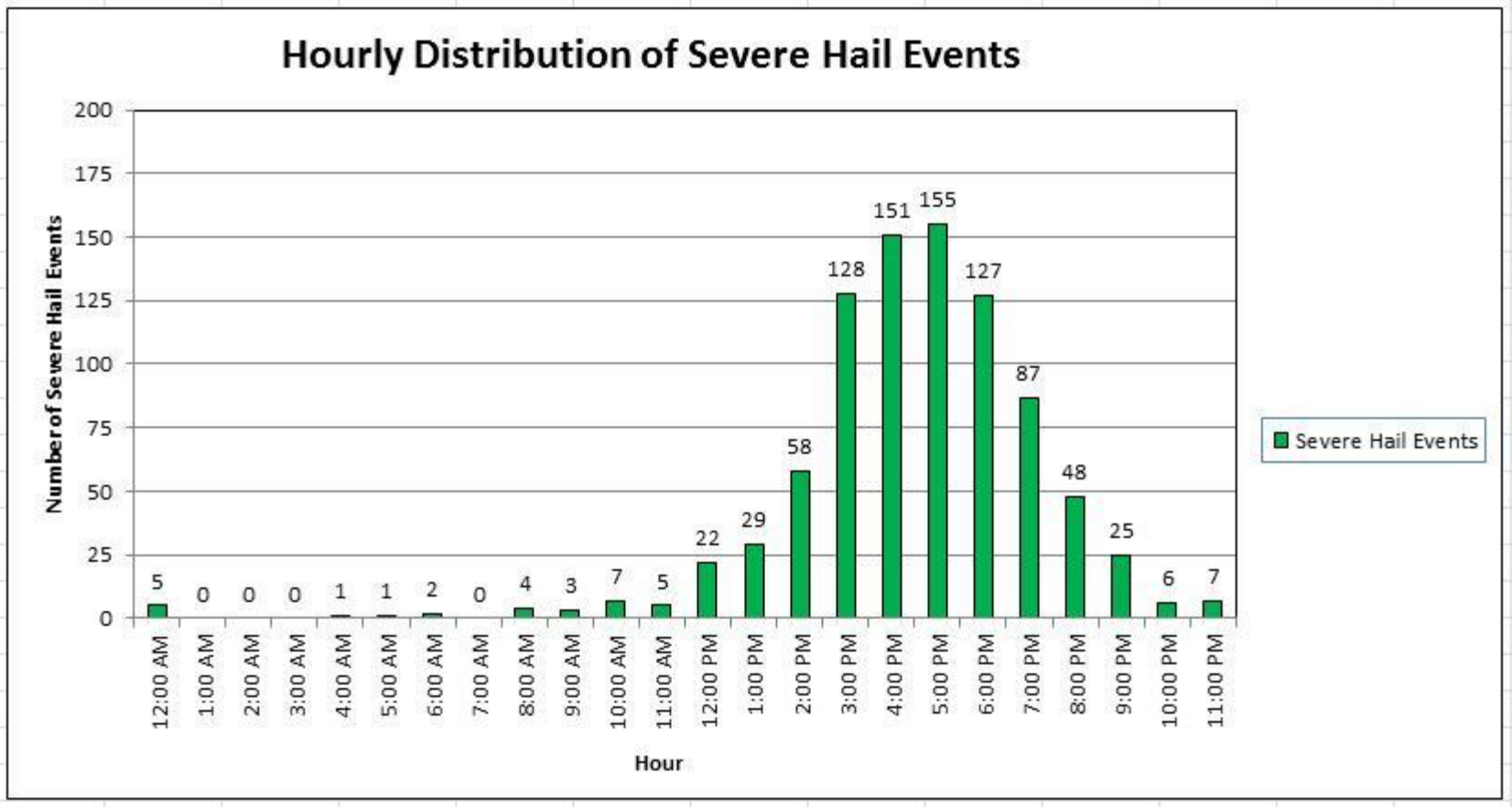
Deadliest Tornado Events

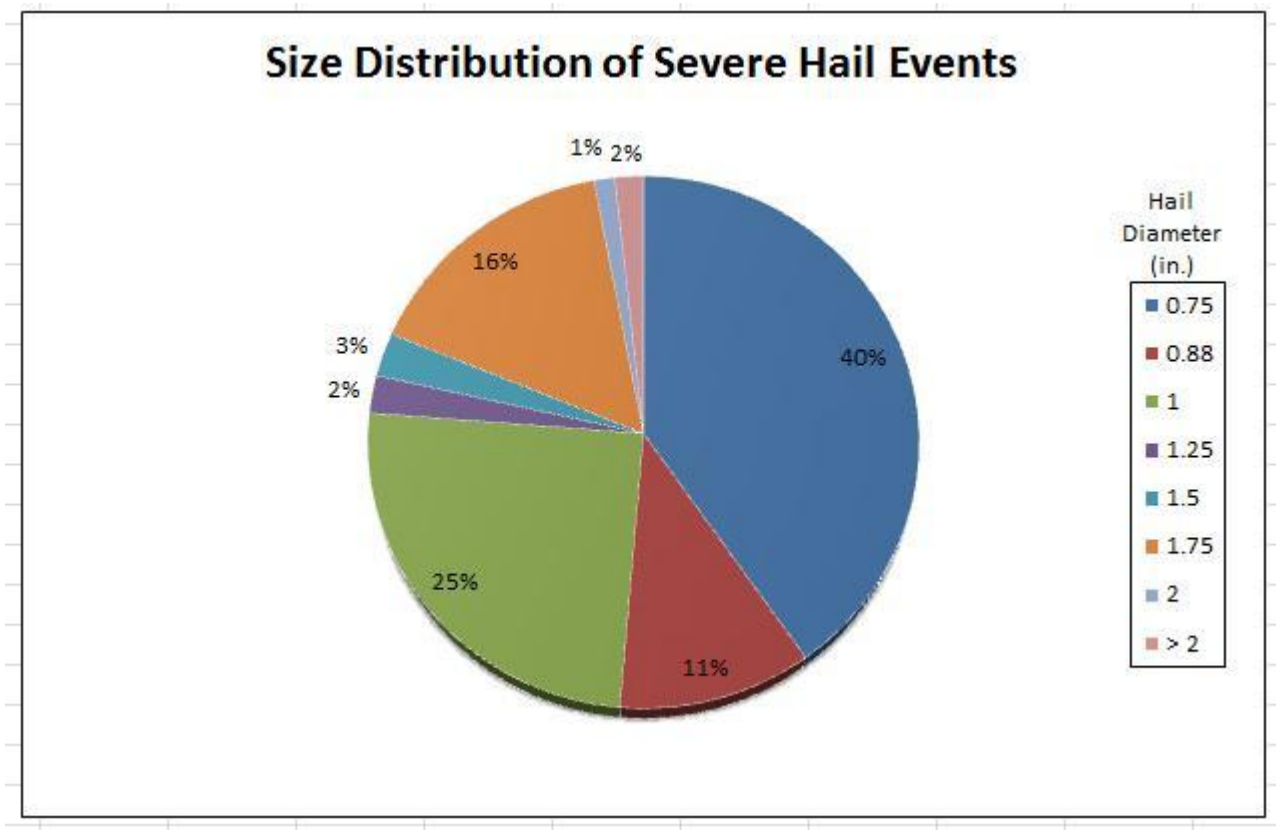
Rank	Date	County(s)	F-Scale	Fatalities
1	February 22, 1998	Osceola & Orange	3	25
2	February 22, 1998	Seminole & Volusia	3	13
3	February 2, 2007	Lake & Volusia	3	13
4	February 2, 2007	Lake	3	8
5	February 22, 1998	Lake & Orange	3	3


Annual Distribution of Severe Hail Events
Number of Severe Hail Events
100
90
80
70
60
50
40
30
20
10
0
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
Year
Number of Severe Hail Events
Number of Significant Hail Events (2 inch diameter or greater)

Monthly Distribution of Severe Hail Events
Number of Severe Hail Events
250
225
200
175
150
125
100
75
50
25
0
8
40
122
100
211
185
125
57
8
15
0
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Hail Events


Wet and Dry Season Distribution of Severe Hail Events
270, 31%
601, 69%
Wet (May-Oct)
Dry (Nov - Apr)

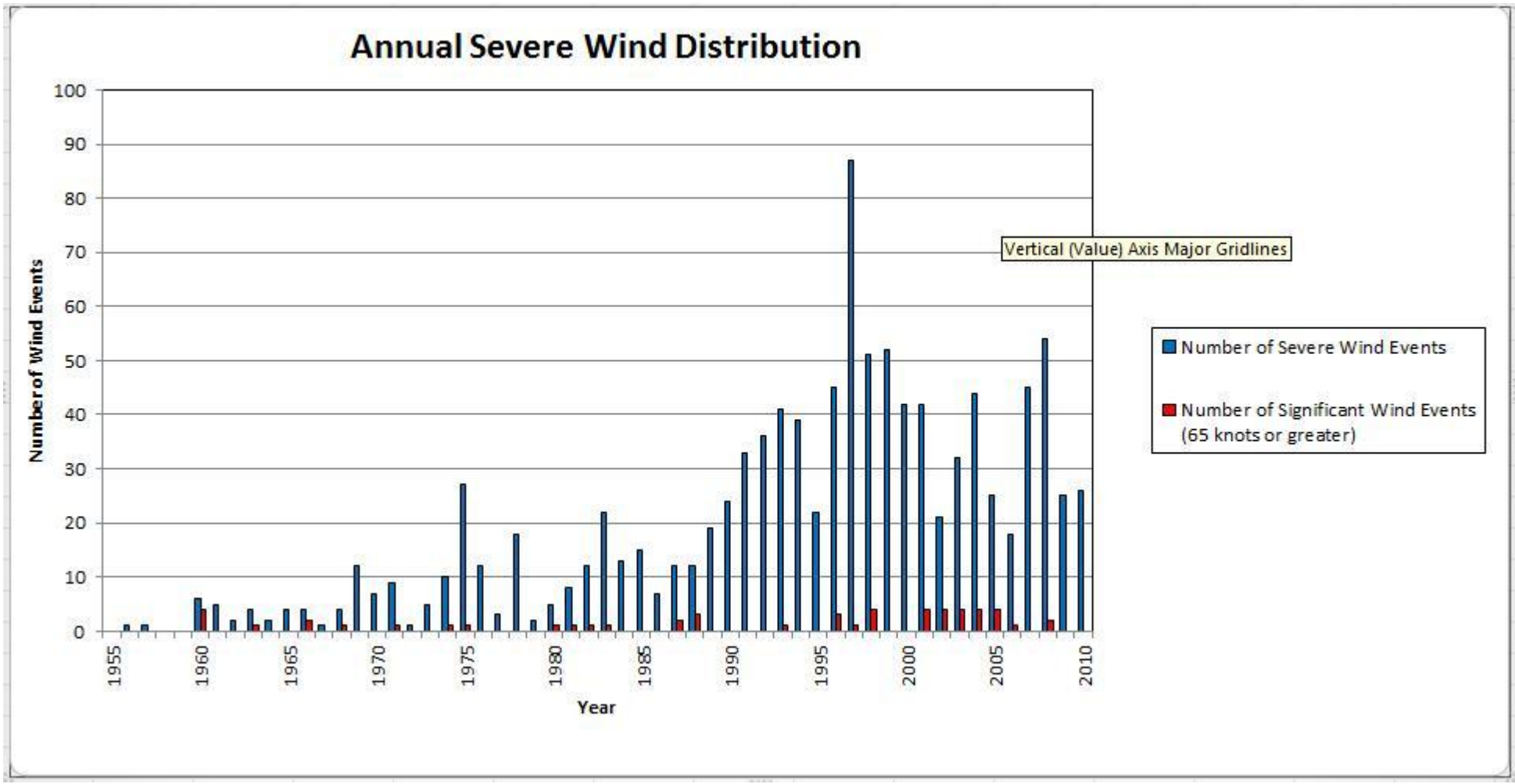

Hourly Distribution of Severe Hail Events
Number of Severe Hail Events
200
175
150
125
100
75
50
25
0
5
0
0
0
1
1
2
0
4
3
7
5
22
29
58
128
151
155
127
87
48
25
6
7
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
Hour
Severe Hail Events

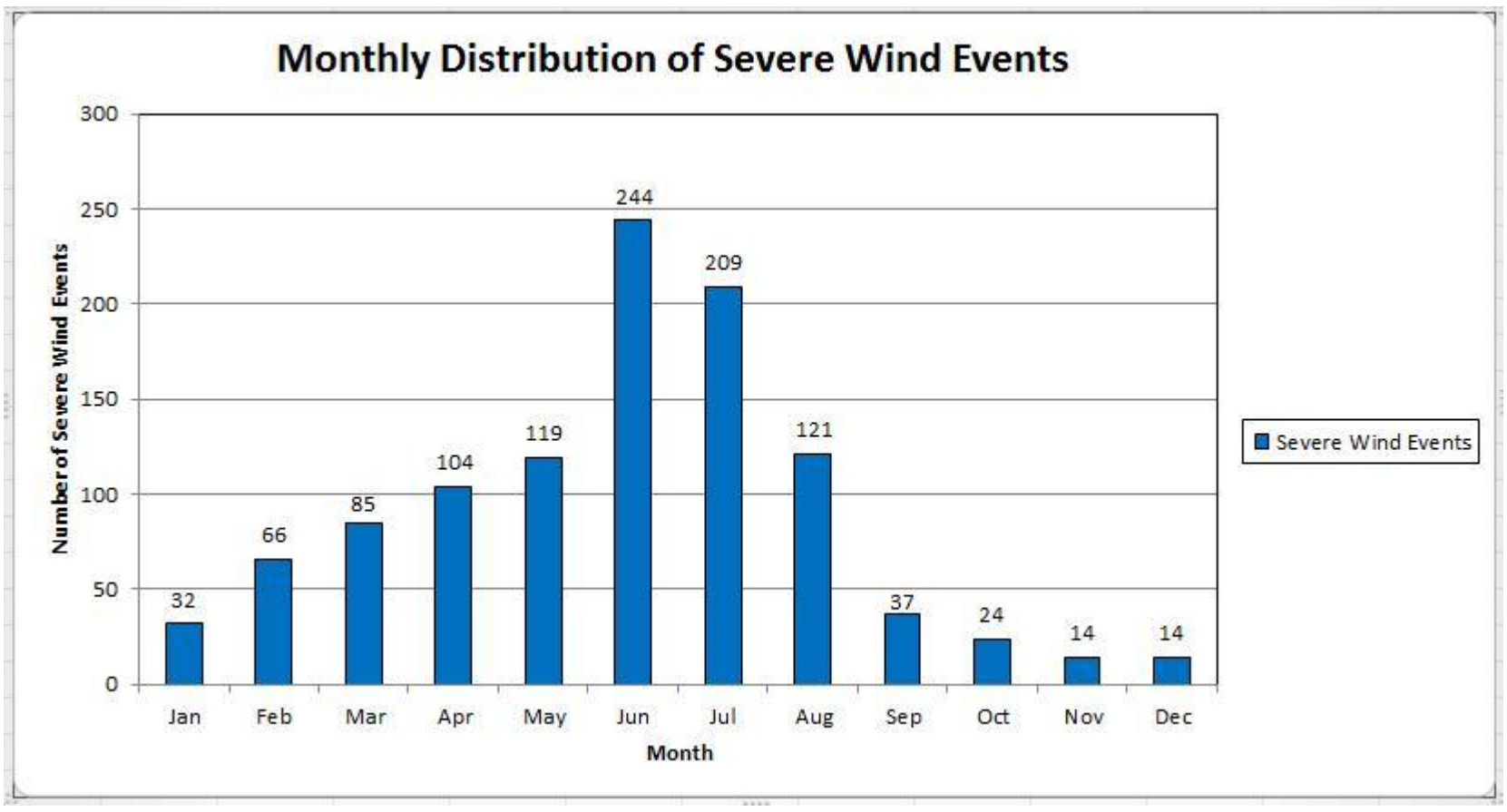

Size Distribution of Severe Hail Events
1%
2%
16%
3%
2%
40%
25%
11%
Hail Diameter (in.)
0.75
0.88
1
1.25
1.5
1.75
2
> 2

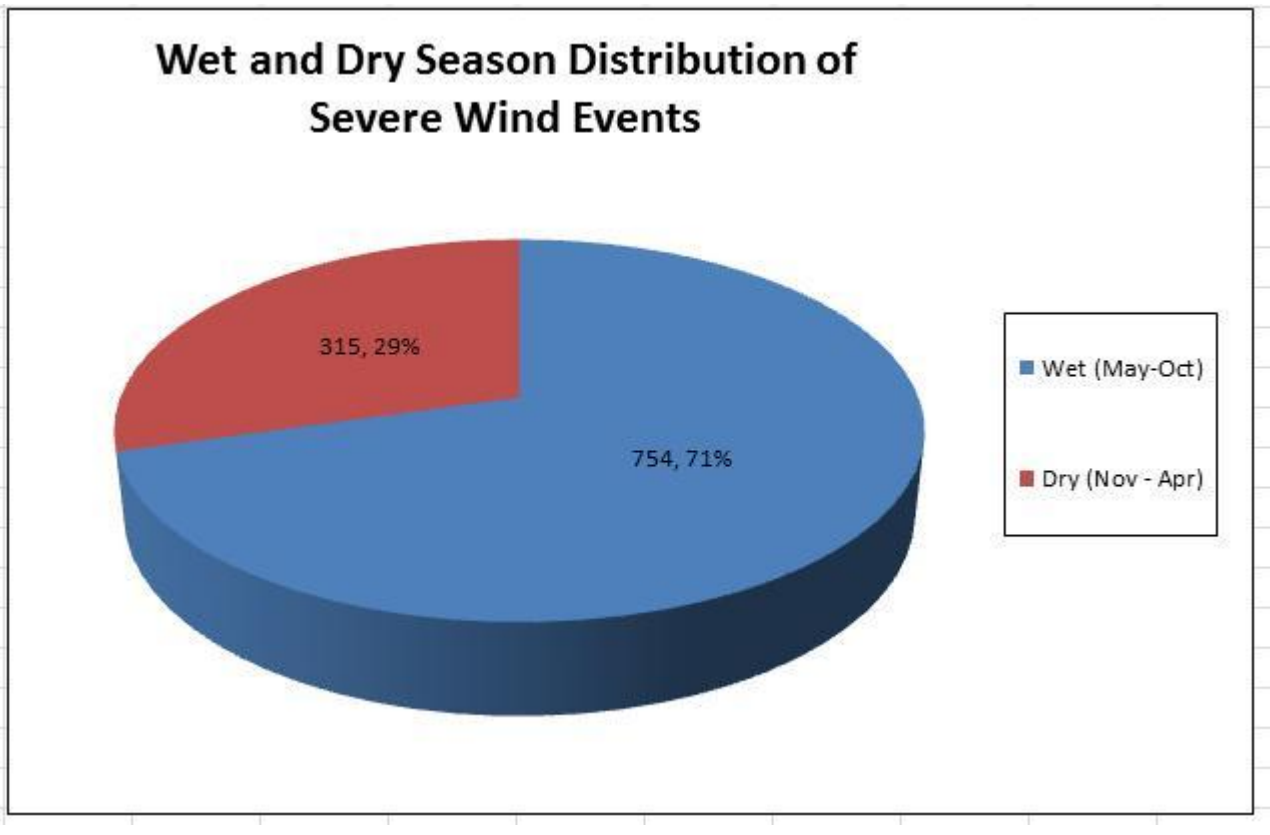
Wet and Dry Season Distribution of Hail Size
Number of Severe Hail Events
275
250
225
200
175
150
125
100
75
50
25
0
259
74
144
12
17
83
7
5
92
22
73
8
6
55
4
10
0.75
0.88
1
1.25
1.5
1.75
2
> 2
Hail Diameter (in.)
Wet Season (May-Oct) Severe Hail Events
Dry Season (Nov-Apr) Severe Hail Events

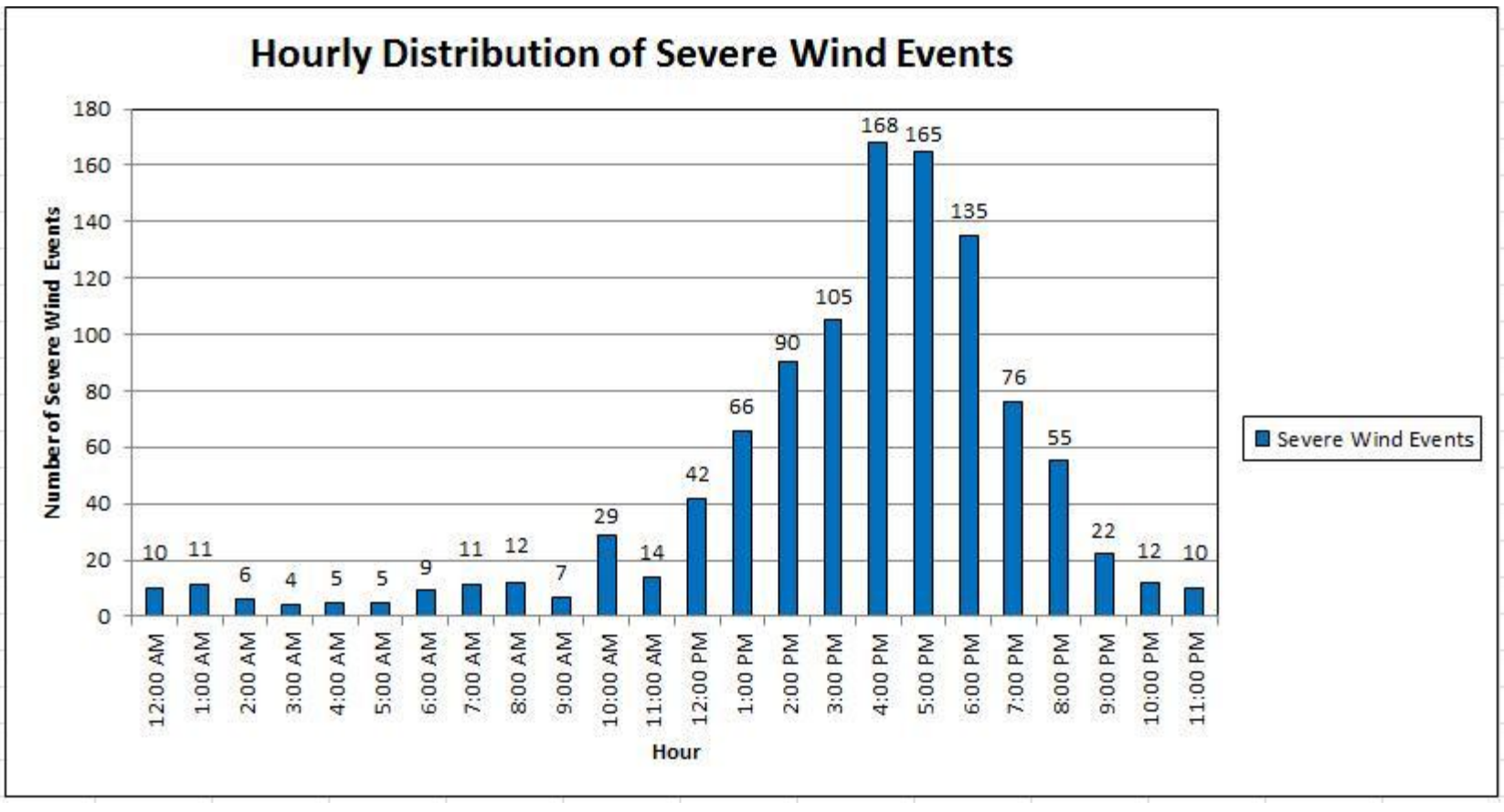
Largest Hail Stones

Rank	Date	County	Diameter (in.)
1	March 25, 1992	Orange	3
2	February 13, 1995	Indian River	3
3	February 13, 1995	St. Lucie	3
4	April 7, 2005	Orange	2.75
5	May 3, 2007	St. Lucie	2.75
6	June 23, 1970	Orange	2.75
7	February 7, 1971	Volusia	2.75
8	May 7, 1975	St. Lucie	2.75
9	May 31, 1976	Seminole	2.75
10	March 17, 2003	Brevard	2.5
11	March 3, 1991	Volusia	2.5
12	June 19, 1995	Volusia	2.5


Annual Severe Wind Distribution
Number of Wind Events
100
90
80
70
60
50
40
30
20
10
0
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
Year
Vertical (Value) Axis Major Gridlines
Number of Severe Wind Events
Number of Significant Wind Events (65 knots or greater)


Monthly Distribution of Severe Wind Events
Number of Severe Wind Events
300
250
200
150
100
50
0
32
66
85
104
119
244
209
121
37
24
14
14
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Wind Events


Wet and Dry Season Distribution of Severe Wind Events
315, 29%
754, 71%
Wet (May-Oct)
Dry (Nov - Apr)



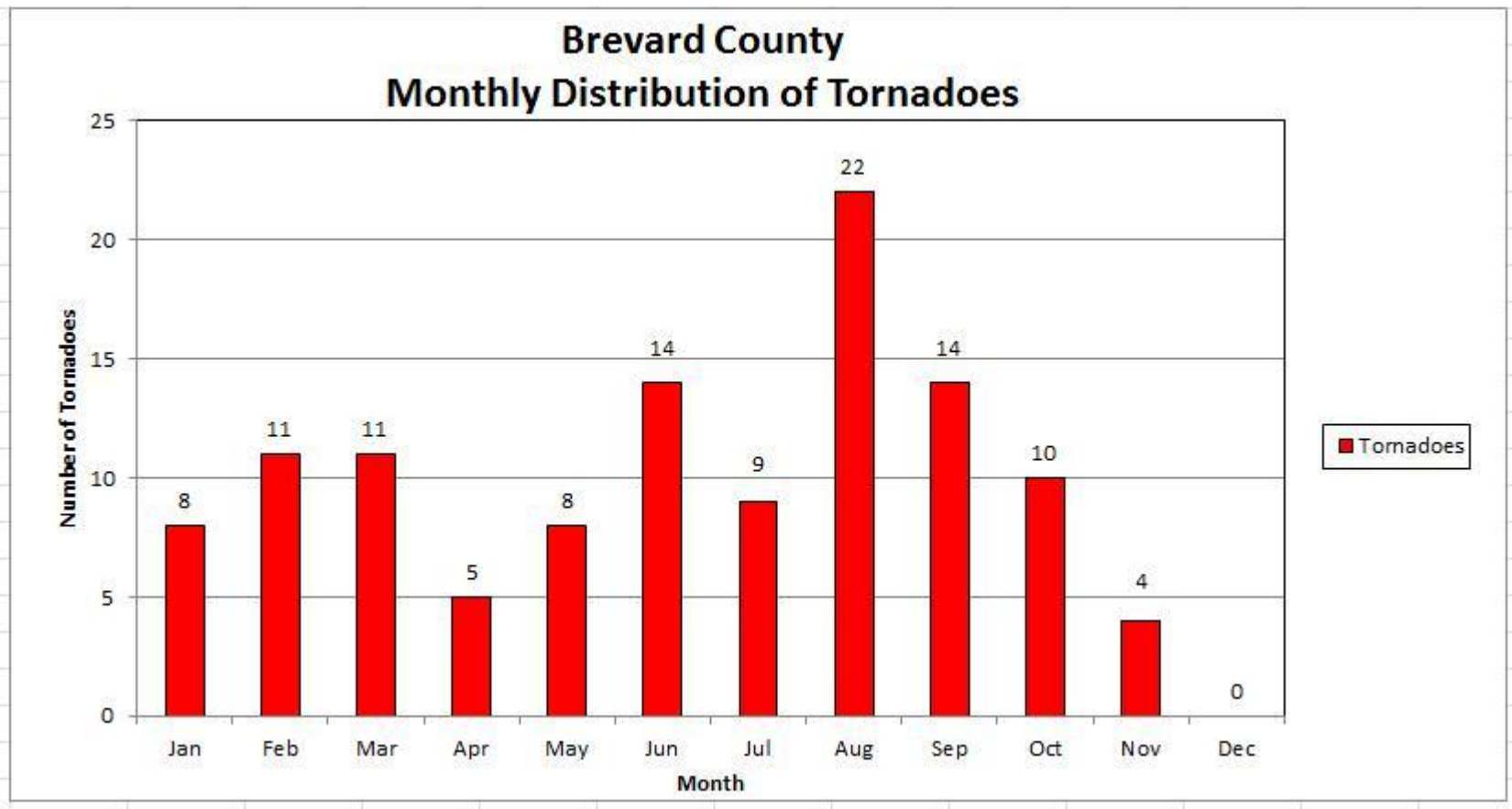
Highest Convective Wind Speeds

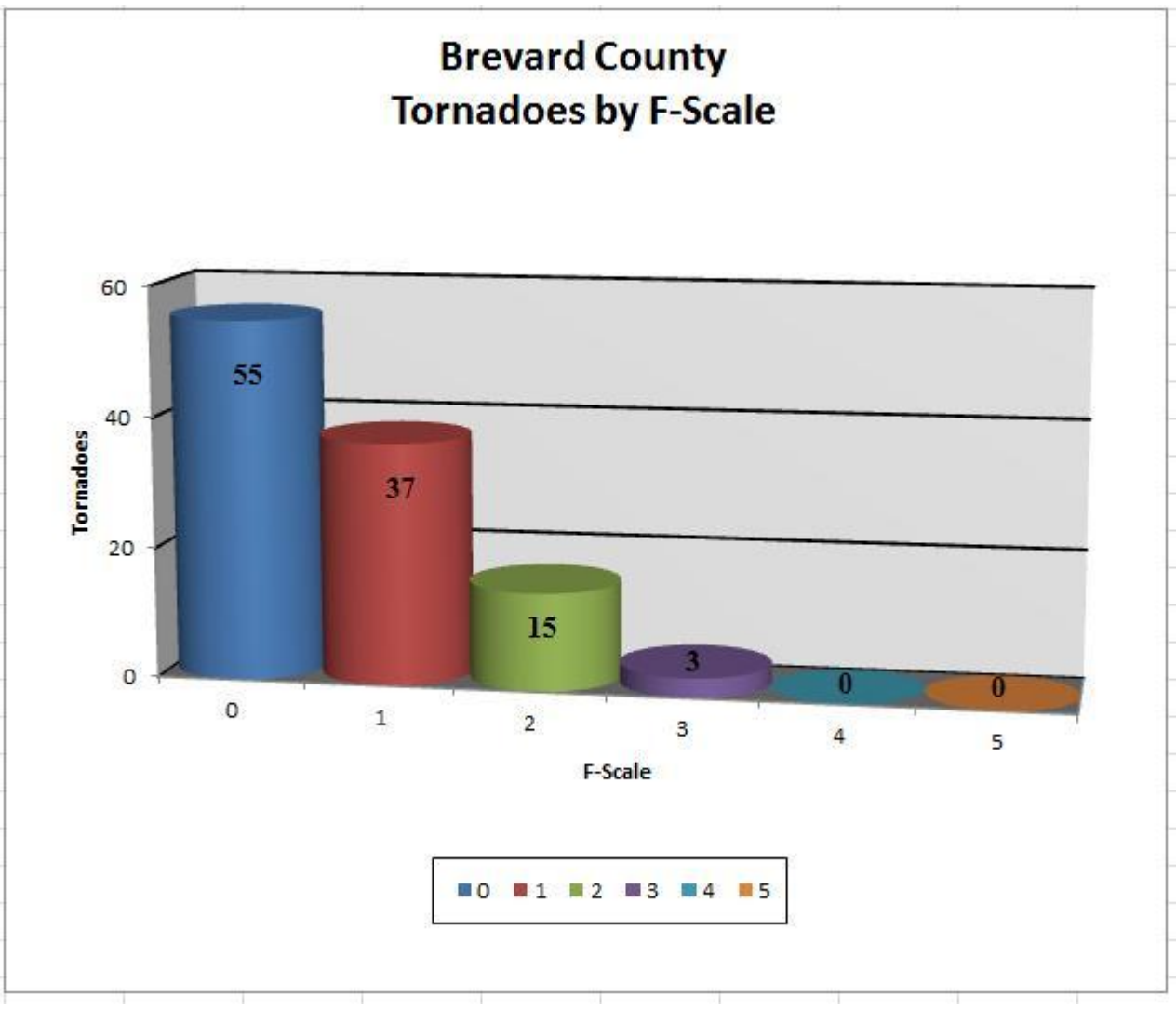
Rank	Date	County	Speed (knots)	Speed (mph)
1	July 9, 1968	Brevard	85	98
2	June 30, 1980	Brevard	84	97
3	March 6, 2008	Martin	84	97
4	March 15, 1960	Brevard	80	92
5	April 3, 2002	Okeechobee	80	92
6	October 21, 2002	Brevard	80	92
7	March 19, 2003	Volusia	80	92
8	April 4, 1966	Orange	78	90
9	July 23, 2003	Brevard	77	89
10	March 29, 1987	Lake	75	86
11	April 15, 1987	Martin	75	86
12	May 8, 1966	Volusia	75	86

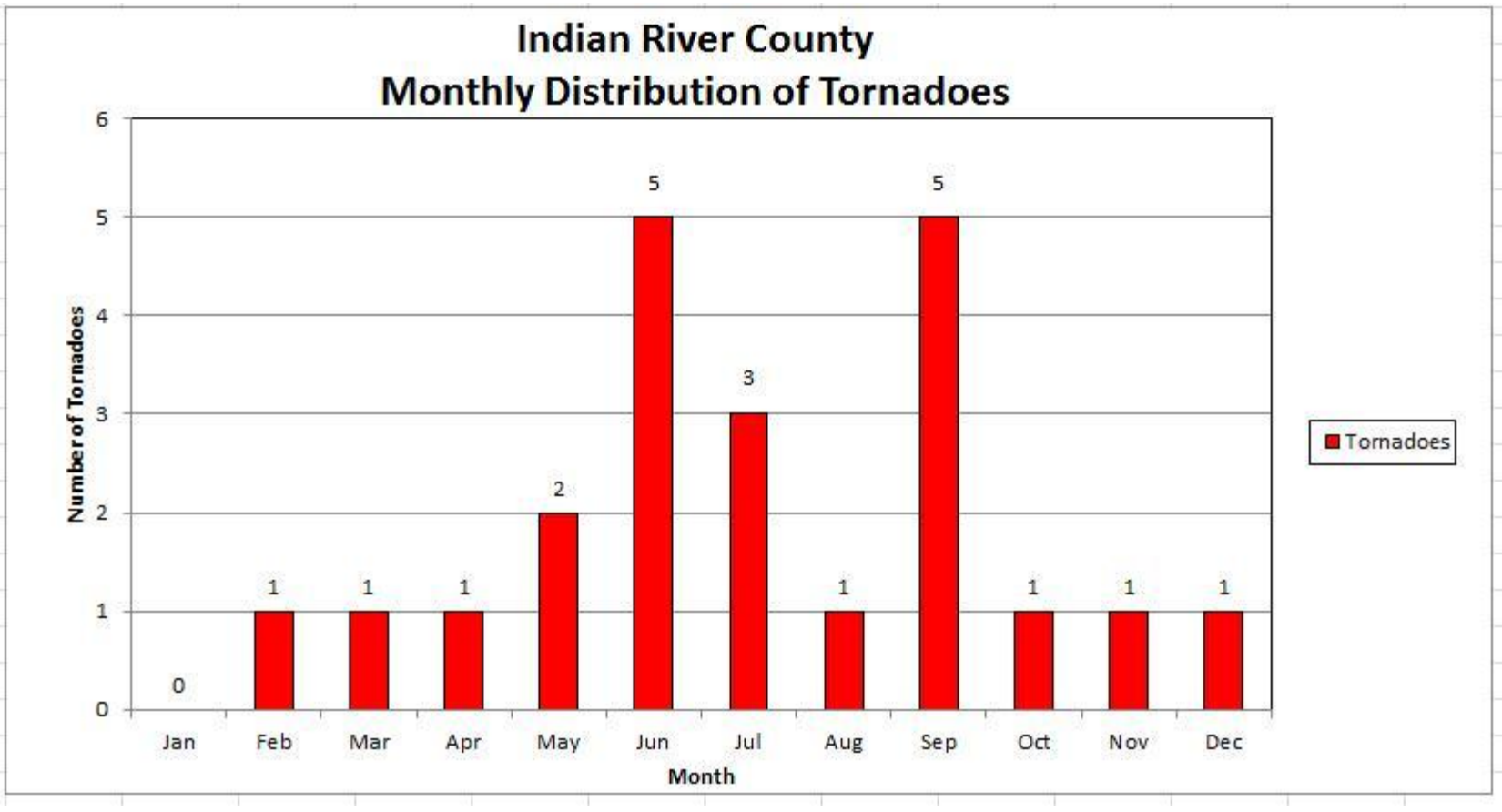
Single Day Highest Rainfall Amounts

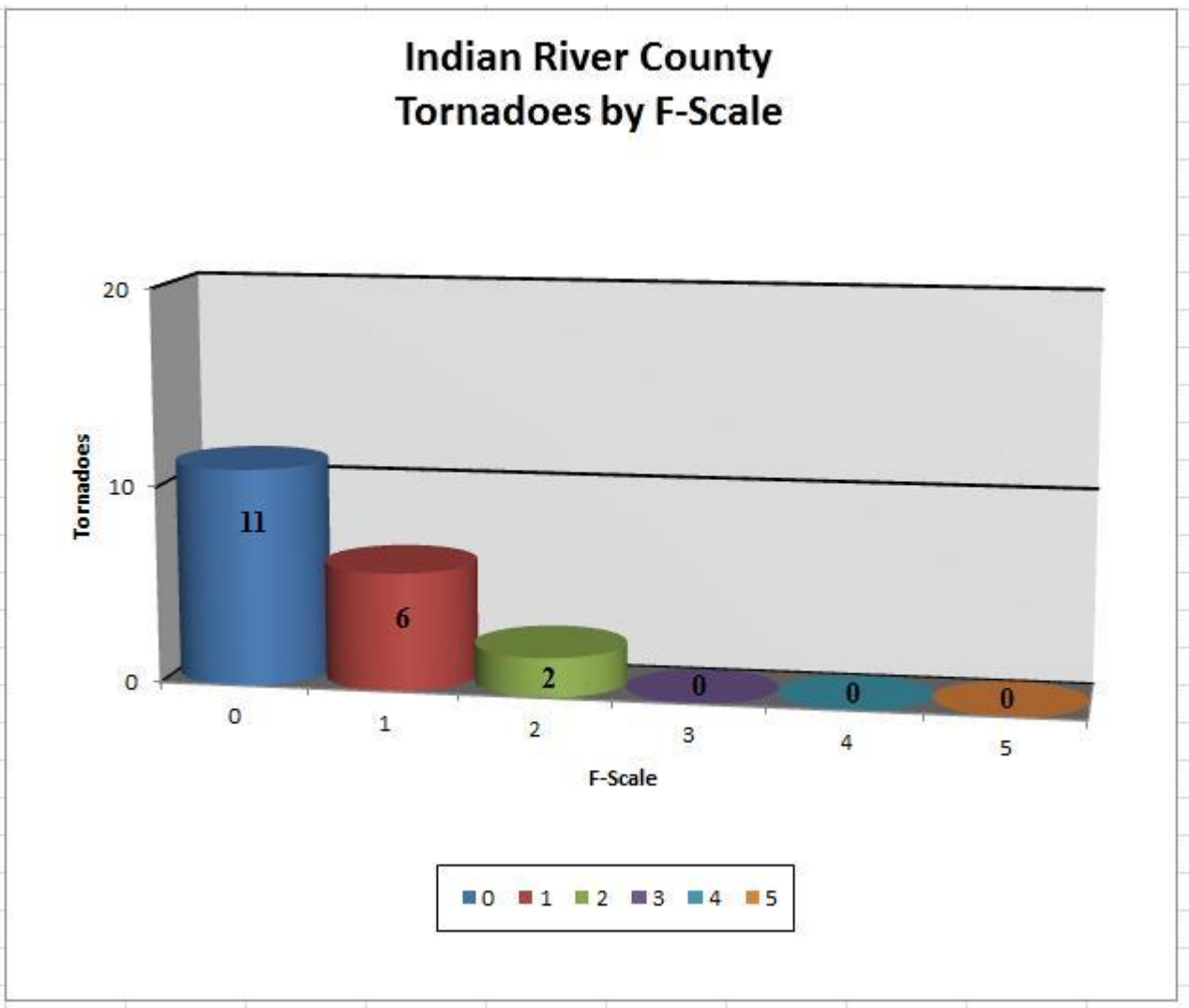
Site	Date	1 Day Rainfall
Daytona Beach	October 10, 1924	12.85"
Orlando	September 16, 1945	8.43"
Melbourne	August 2, 1995	9.06"
Vero Beach	January 21, 1957	8.82"

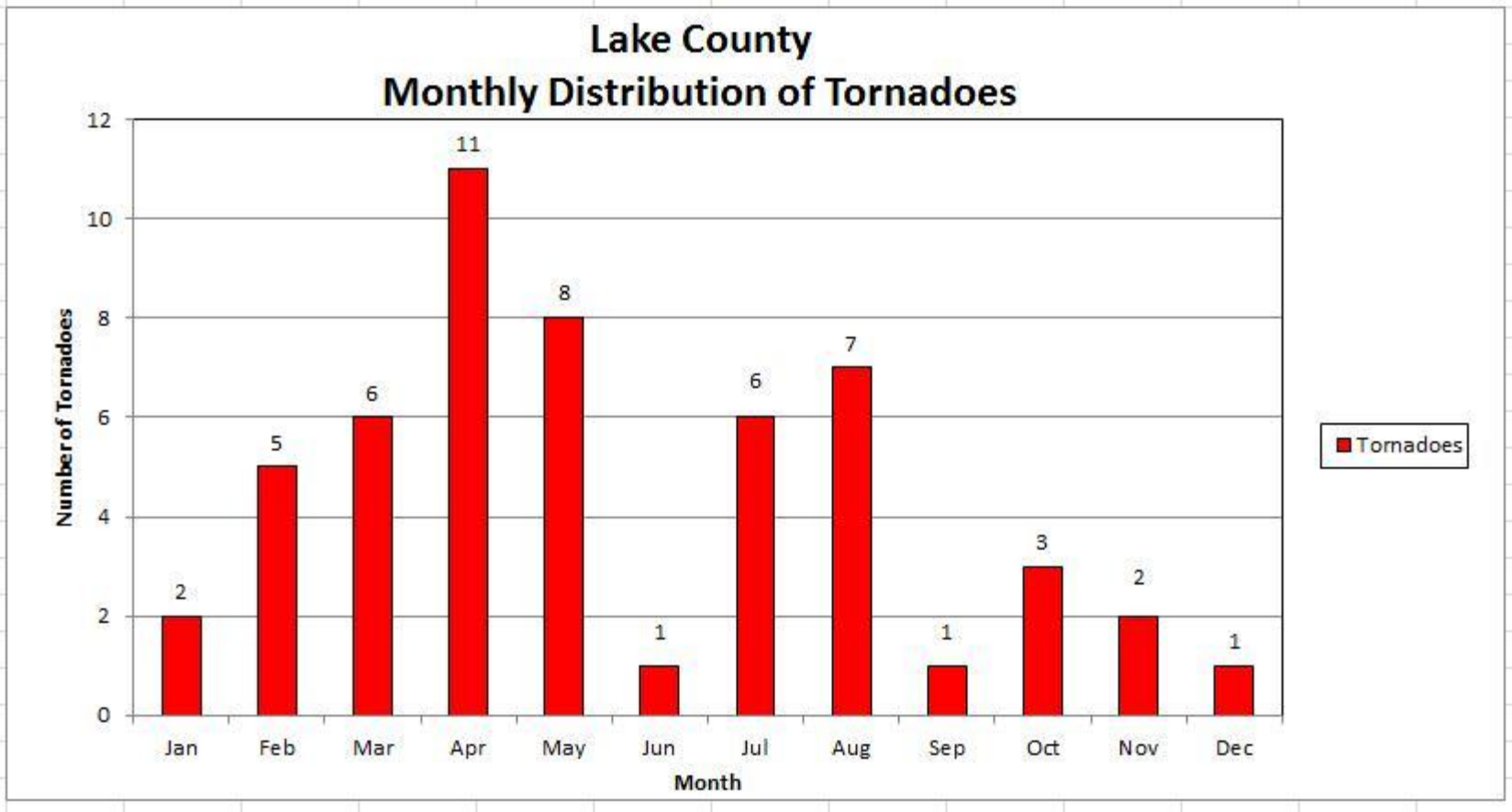
County Specific Climatology

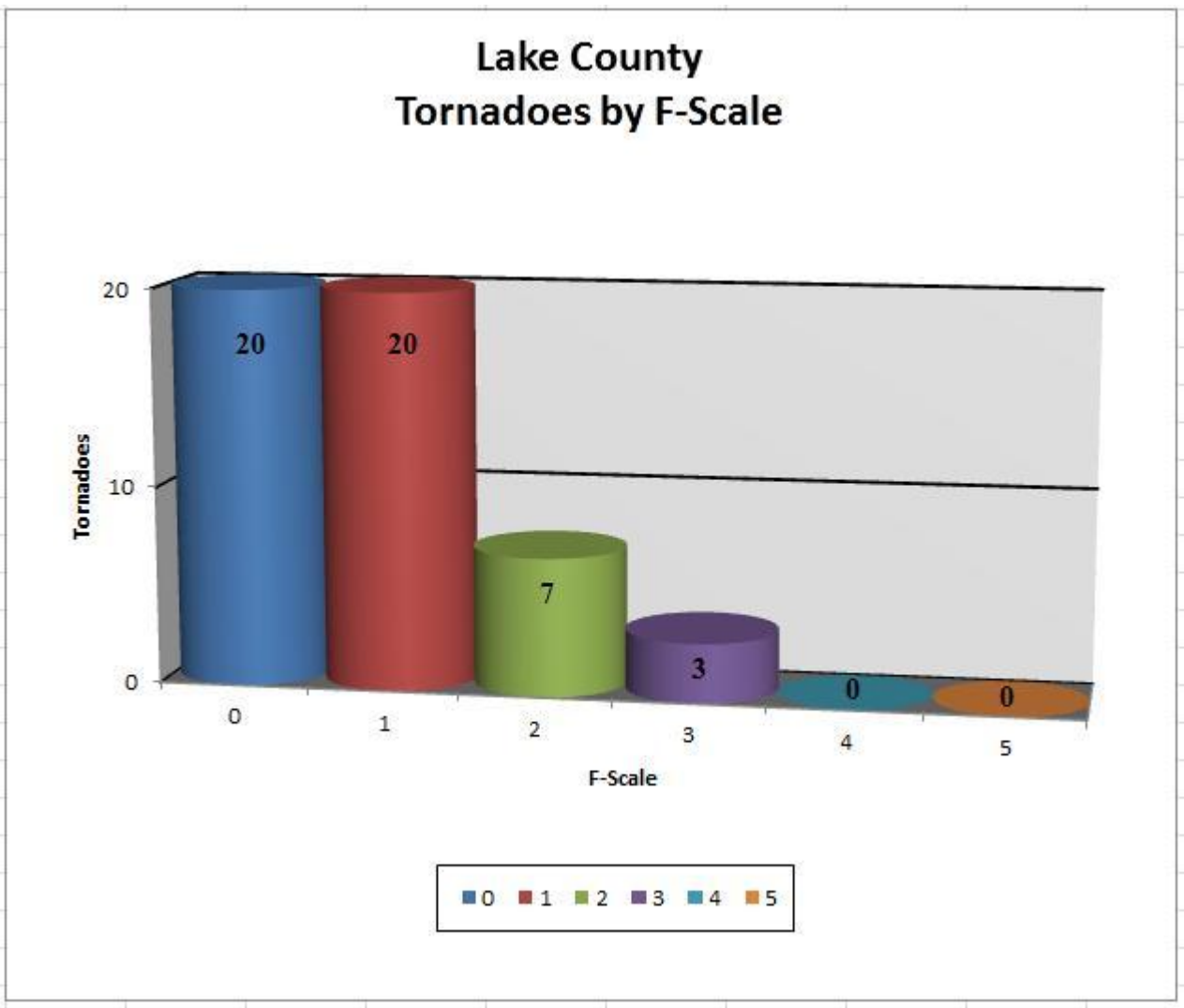


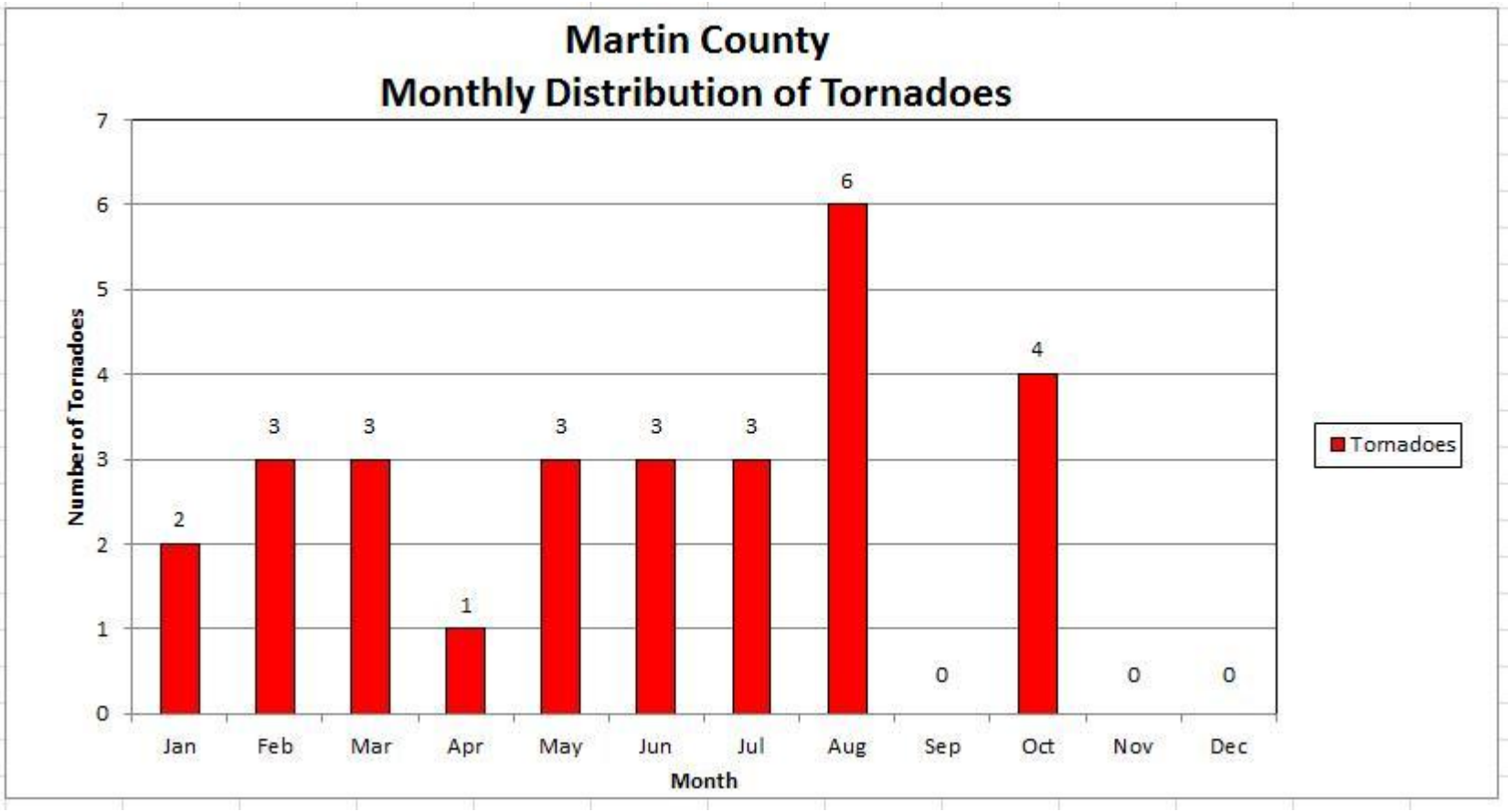


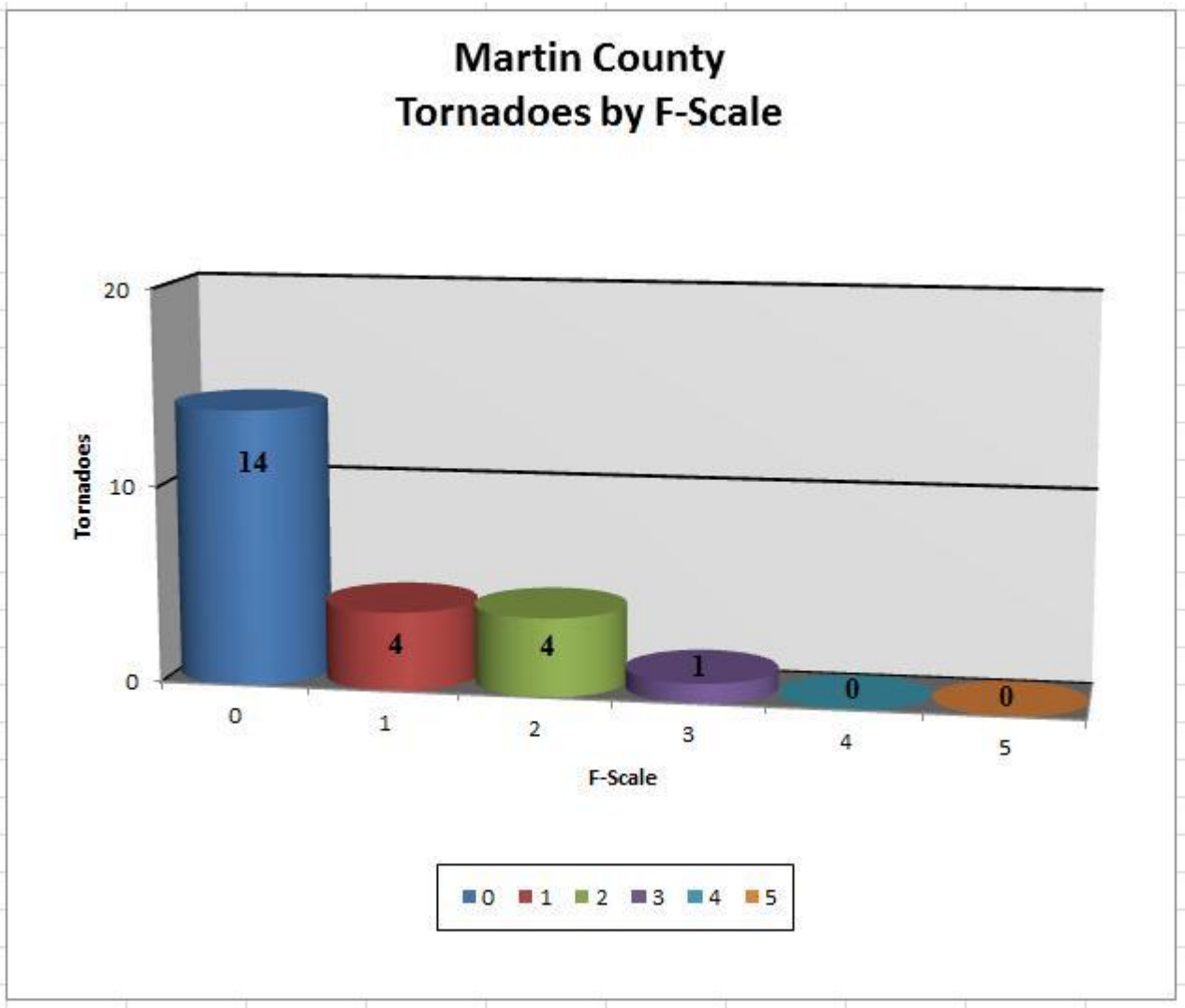

Indian River County
Monthly Distribution of Tornadoes
Number of Tornadoes
0
1
2
3
4
5
6
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
0
1
1
1
2
5
3
1
5
1
1
1
Month
Tornadoes

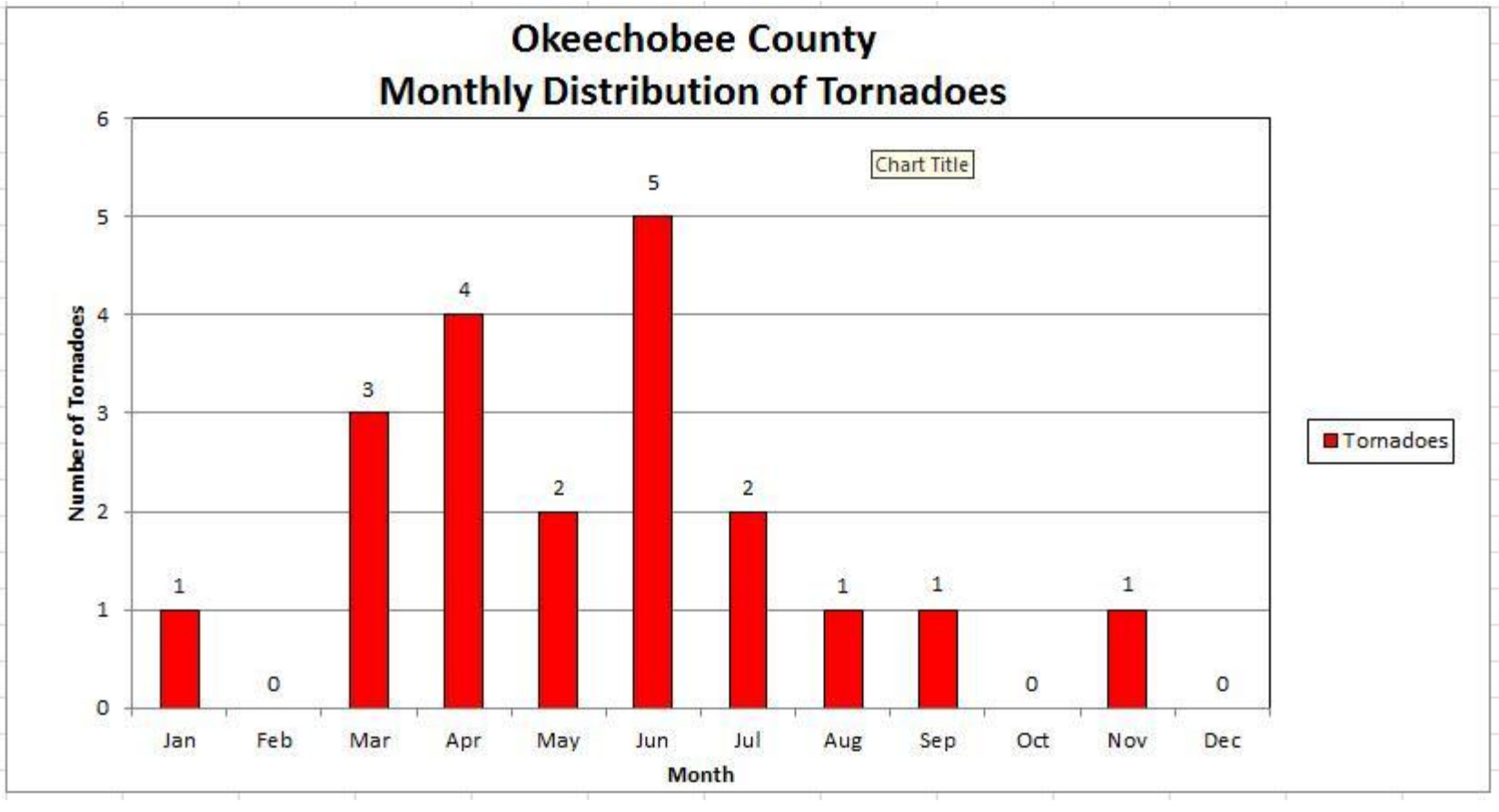

Indian River County
Tornadoes by F-Scale
Tornadoes
0
10
20
11
6
2
0
0
0
0
1
2
3
4
5
F-Scale
0
1
2
3
4
5

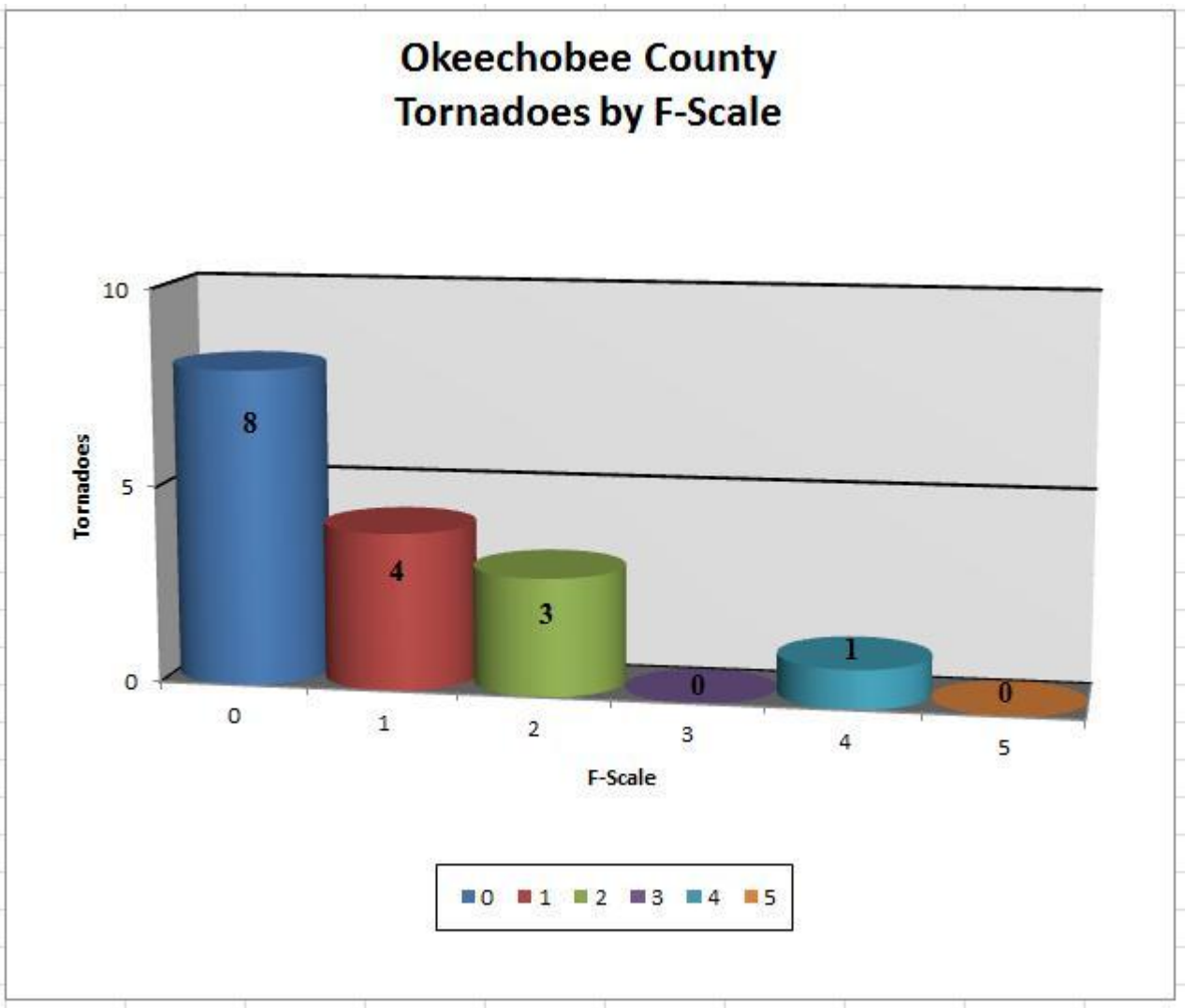

Lake County
Monthly Distribution of Tornadoes
Number of Tornadoes
0
2
4
6
8
10
12
2
5
6
11
8
1
6
7
1
3
2
1
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Tornadoes

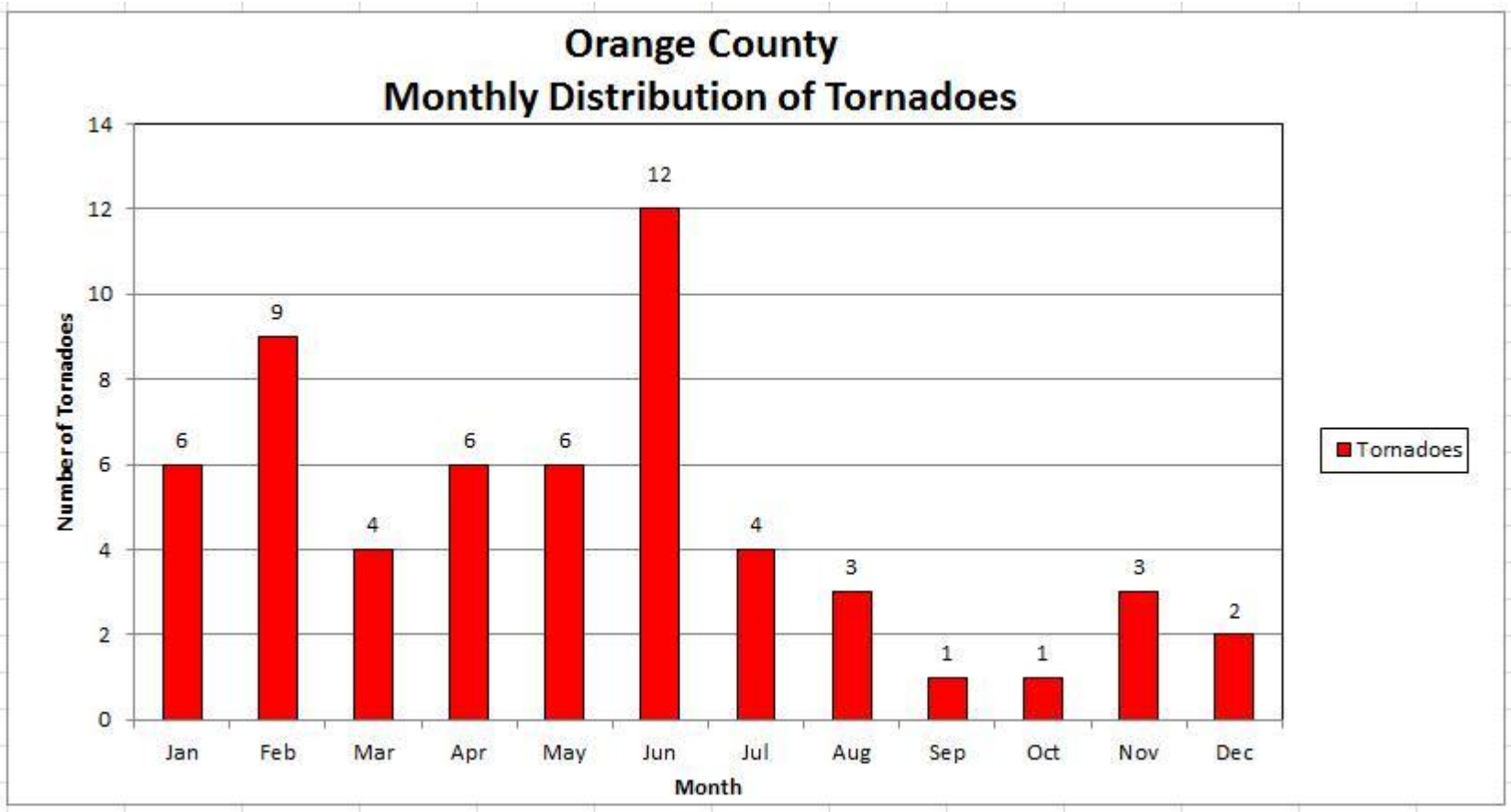

Lake County
Tornadoes by F-Scale
Tornadoes
0
10
20
20
20
7
3
0
0
0
1
2
3
4
5
F-Scale
0
1
2
3
4
5

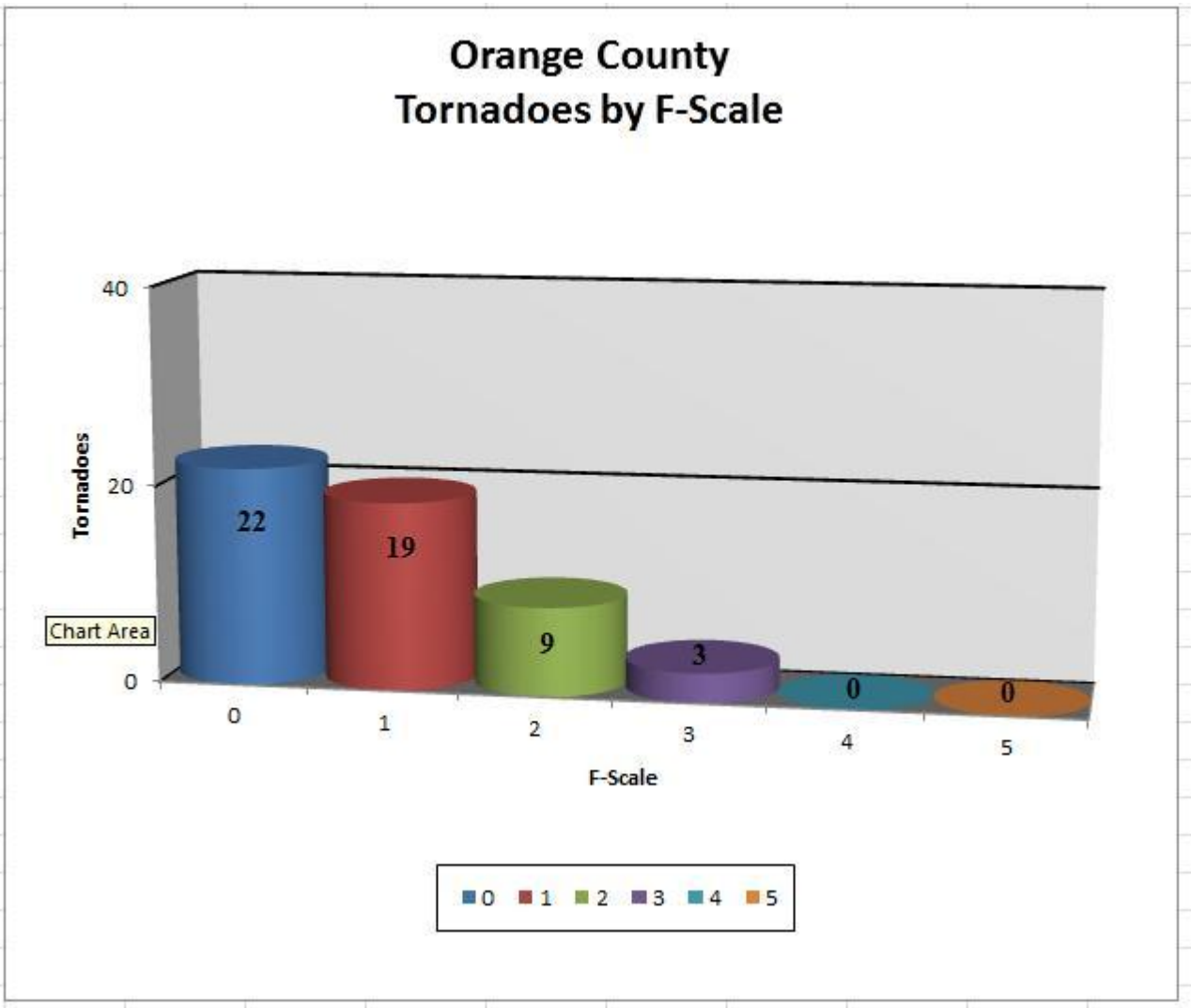

Martin County
Monthly Distribution of Tornadoes
Number of Tornadoes
0
1
2
3
4
5
6
7
2
3
3
1
3
3
3
6
0
4
0
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Tornadoes

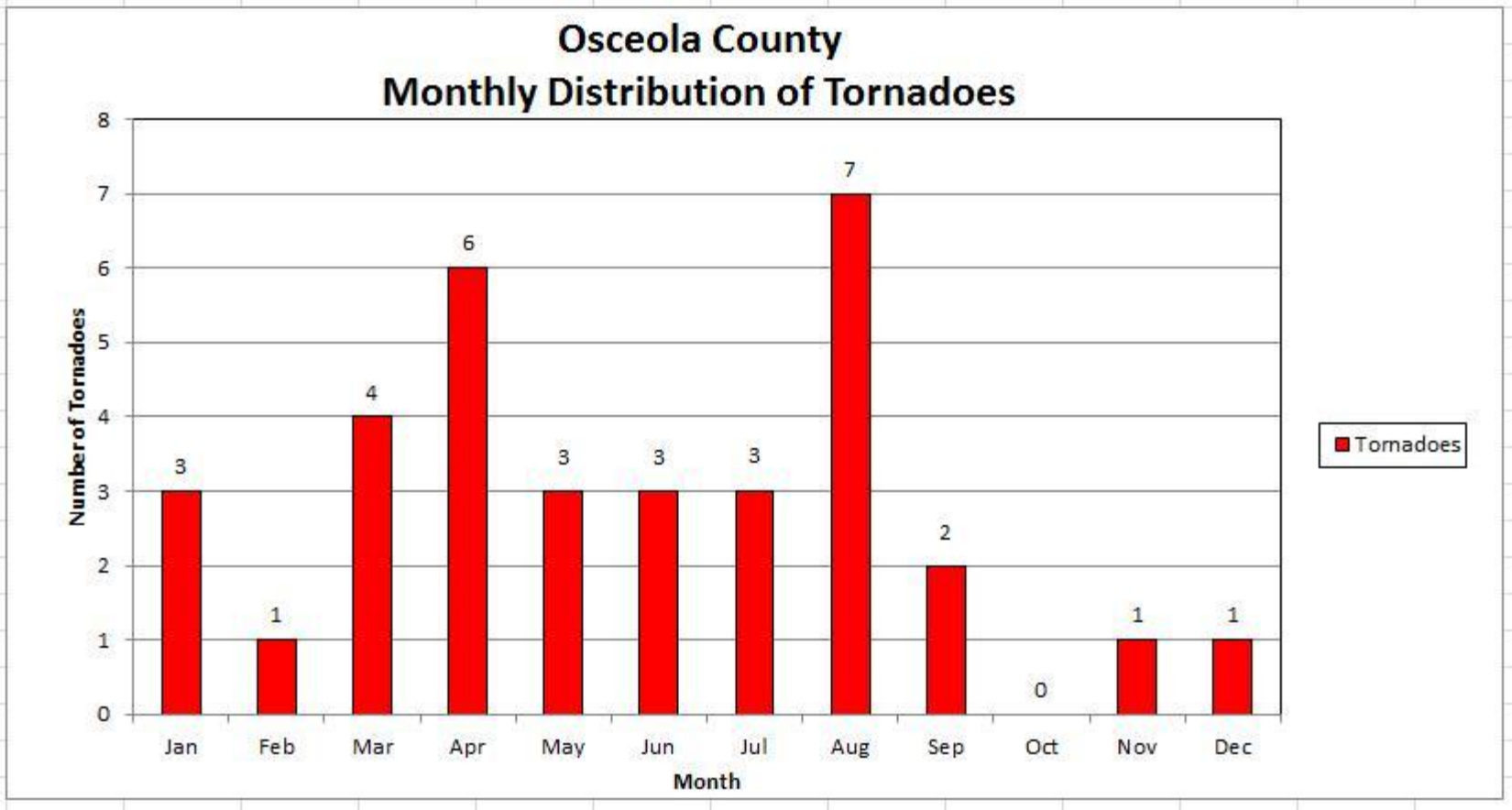

Martin County
Tornadoes by F-Scale
Tornadoes
0
10
20
14
4
4
1
0
0
0
1
2
3
4
5
F-Scale
0
1
2
3
4
5

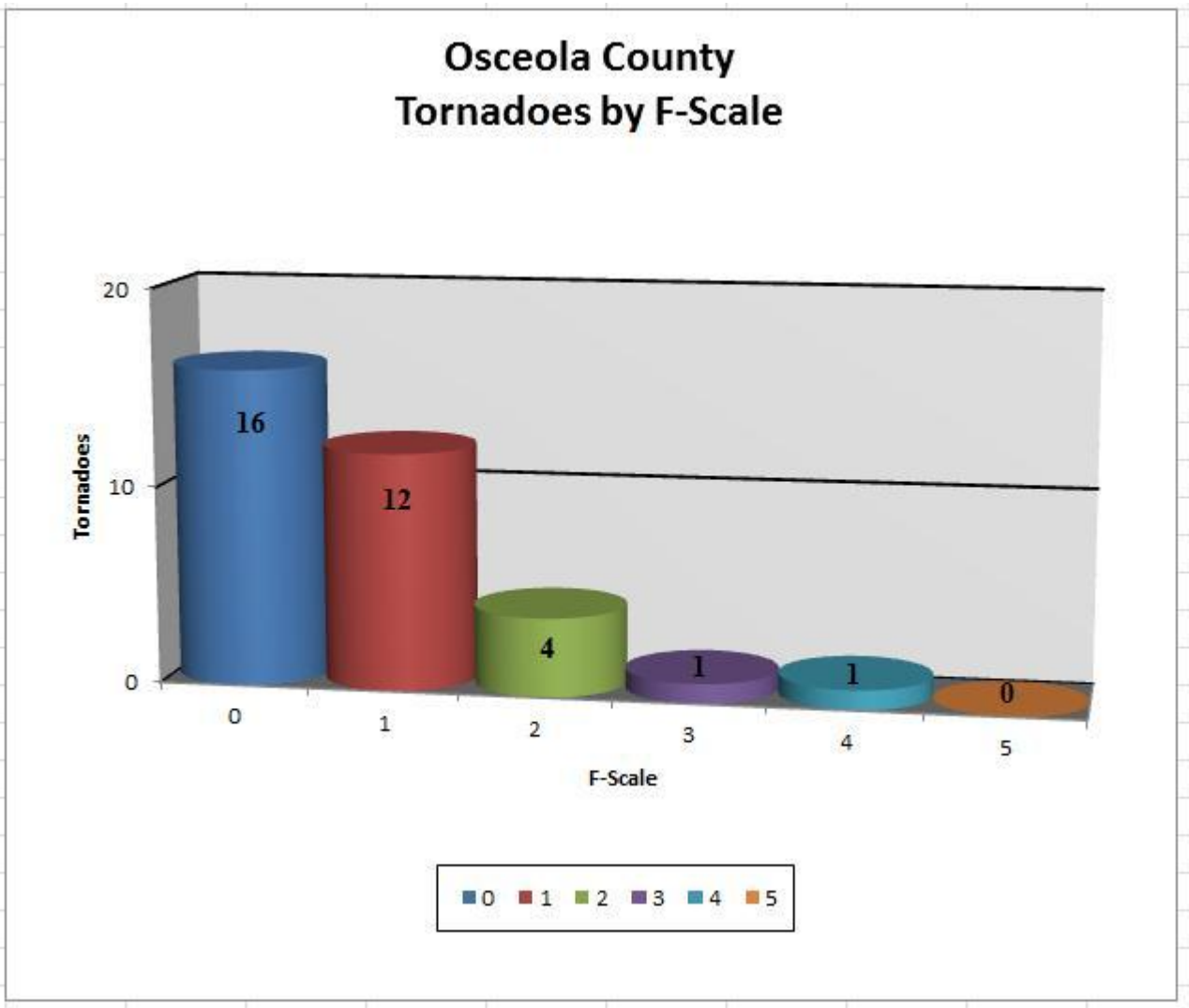

Okeechobee County
Monthly Distribution of Tornadoes
Chart Title
Number of Tornadoes
Month
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
1
0
3
4
2
5
2
1
1
0
1
0
Tornadoes

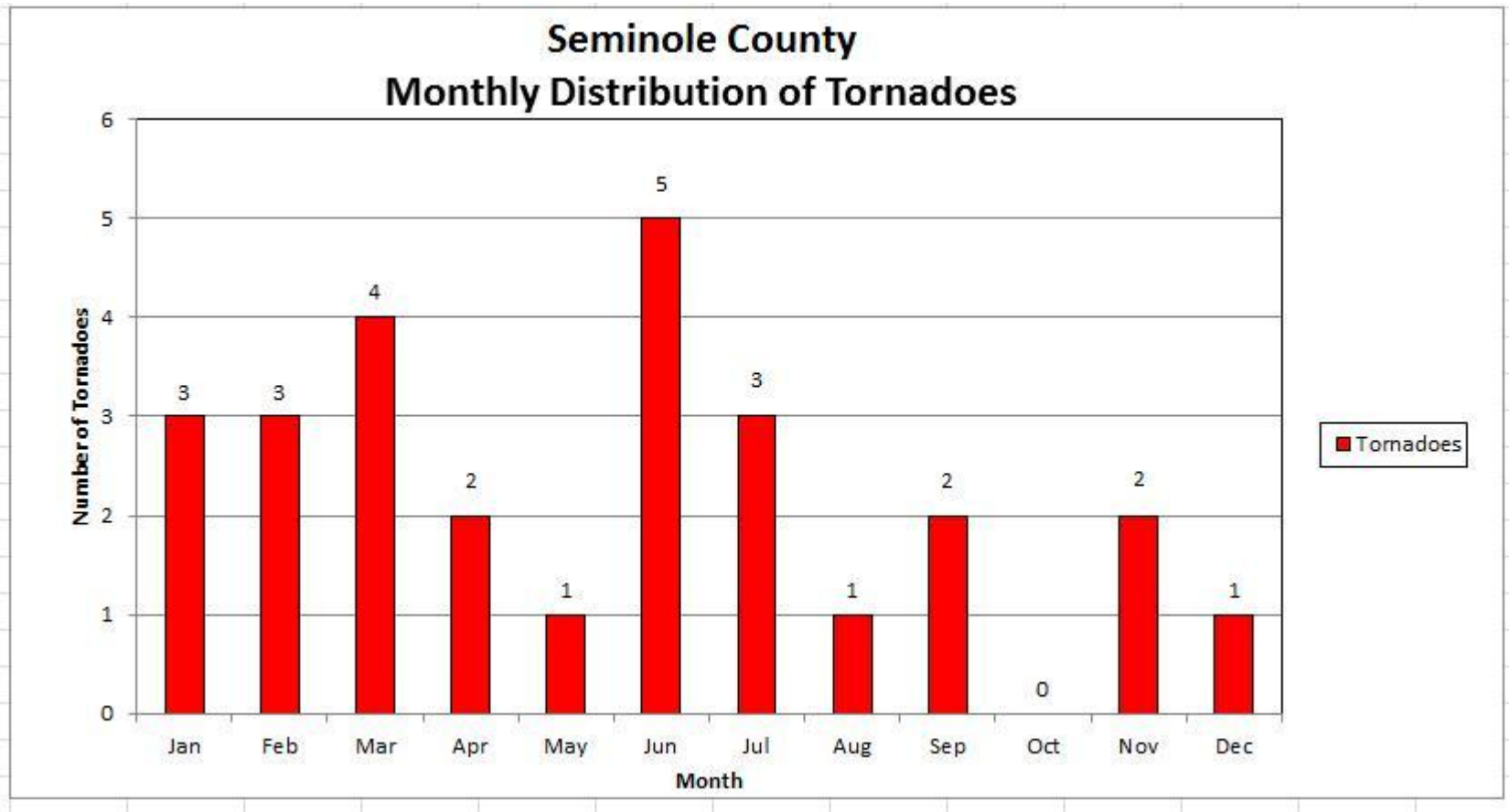

Okeechobee County
Tornadoes by F-Scale
Tornadoes
F-Scale
8
4
3
0
1
0
0 1 2 3 4 5

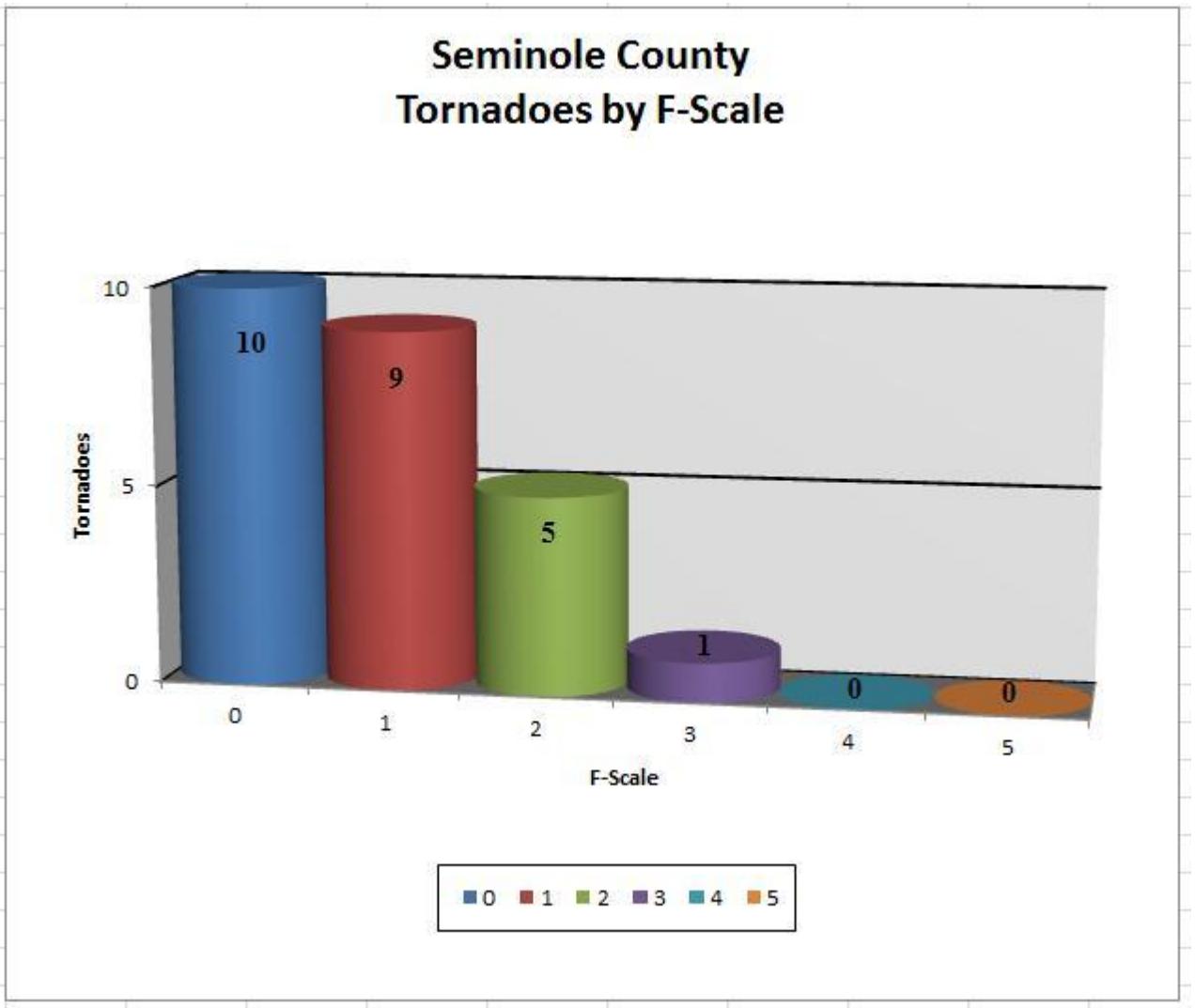

Orange County
Monthly Distribution of Tornadoes
Number of Tornadoes
Month
Tornadoes
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
6
9
4
6
6
12
4
3
1
1
3
2
0
2
4
6
8
10
12
14

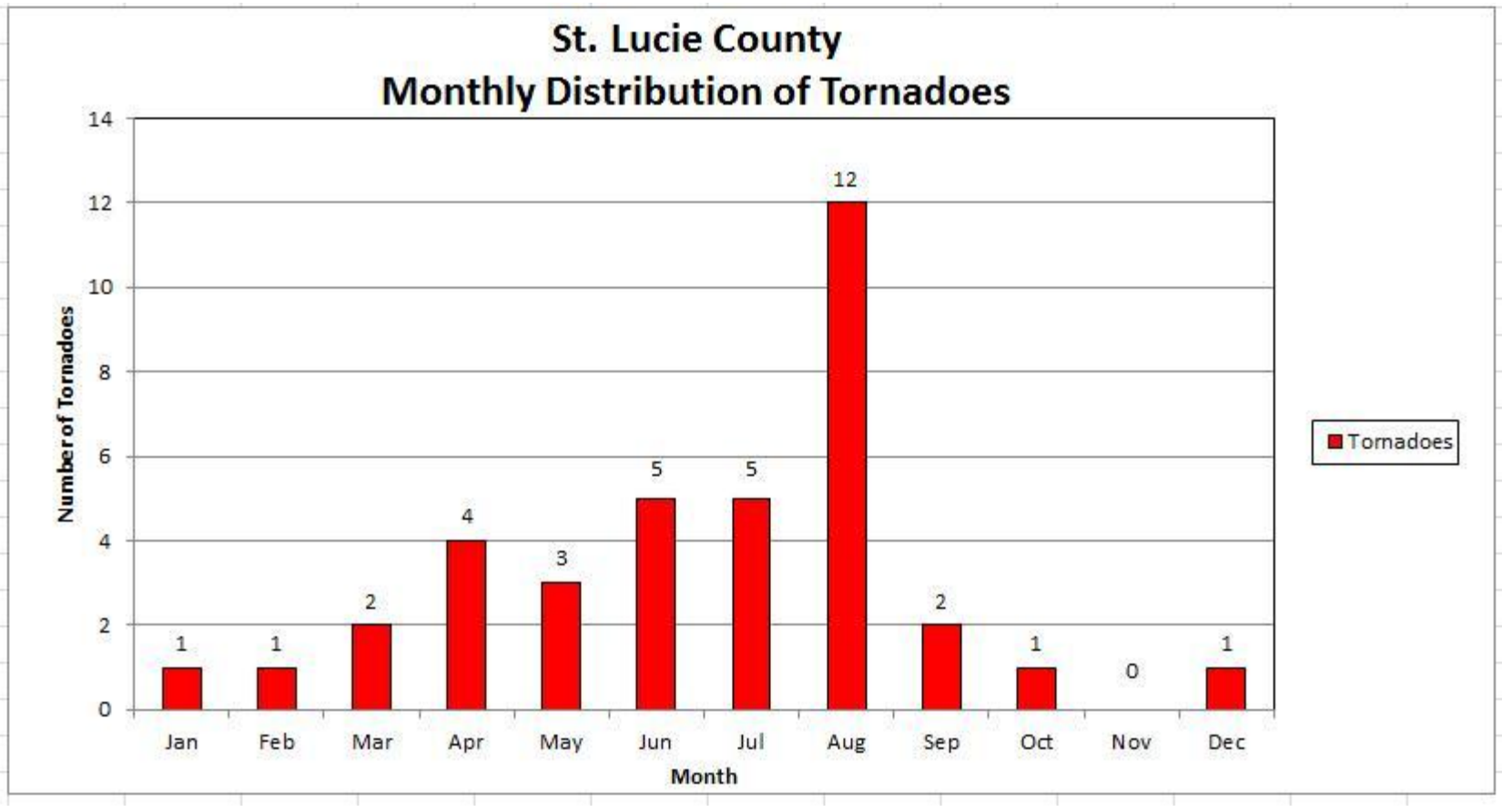

Orange County
Tornadoes by F-Scale
Tornadoes
F-Scale
Chart Area
22
19
9
3
0
0
0
20
40
0
1
2
3
4
5

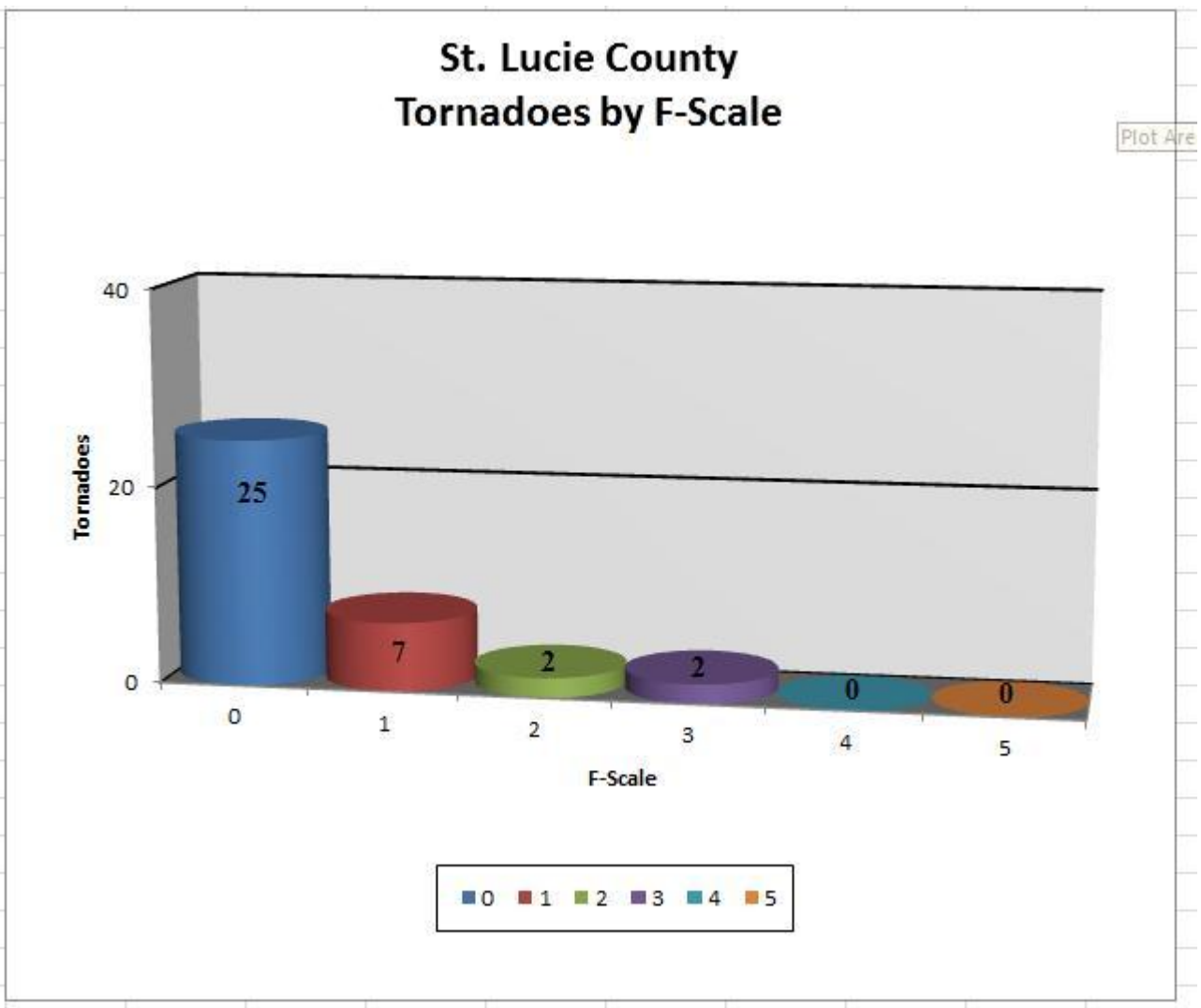

Osceola County
Monthly Distribution of Tornadoes
Number of Tornadoes
0
1
2
3
4
5
6
7
8
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
3
1
4
6
3
3
3
7
2
0
1
1
Month
Tornadoes

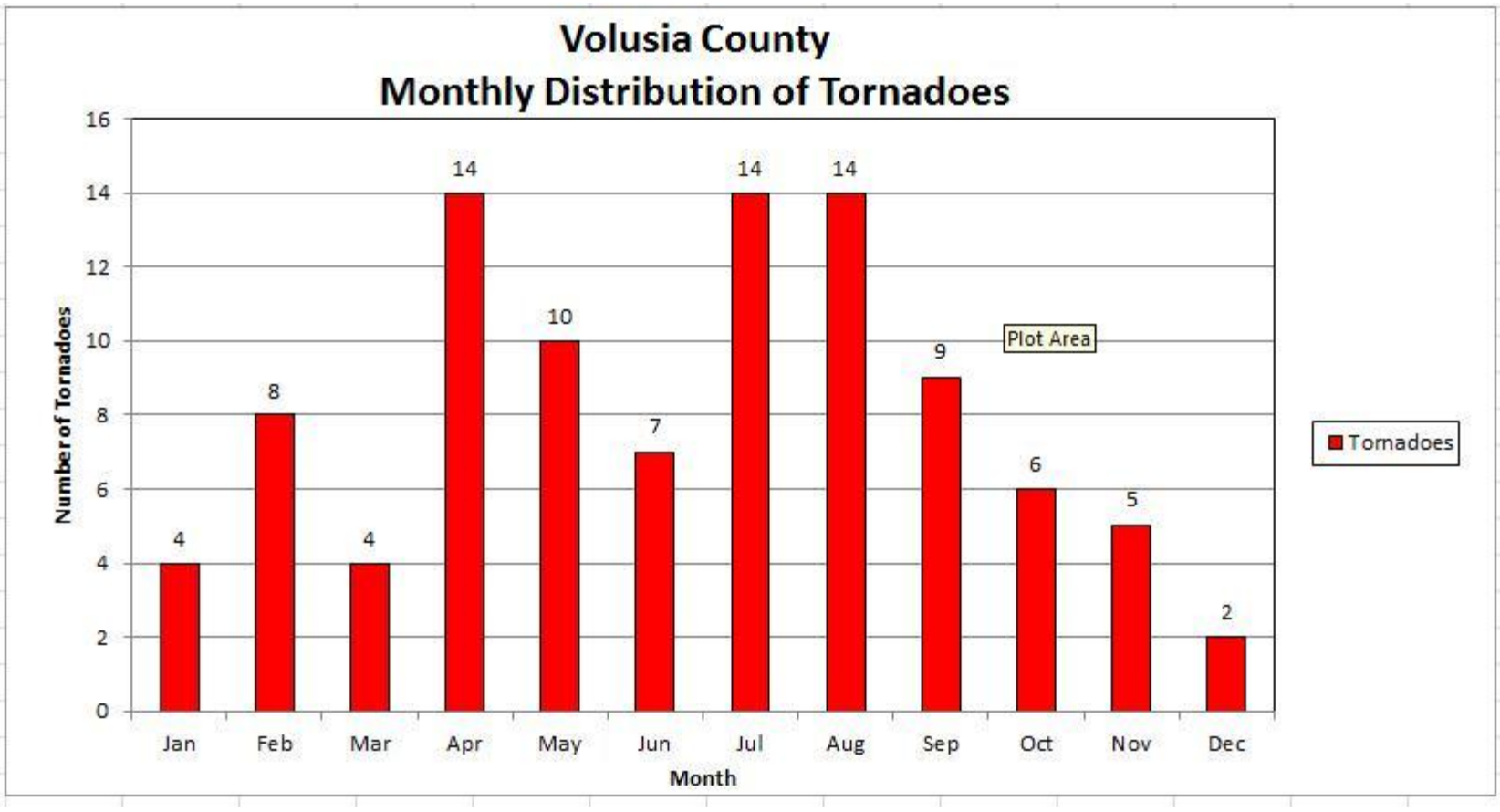

Osceola County
Tornadoes by F-Scale
Tornadoes
0
10
20
16
12
4
1
1
0
0
1
2
3
4
5
F-Scale
0
1
2
3
4
5

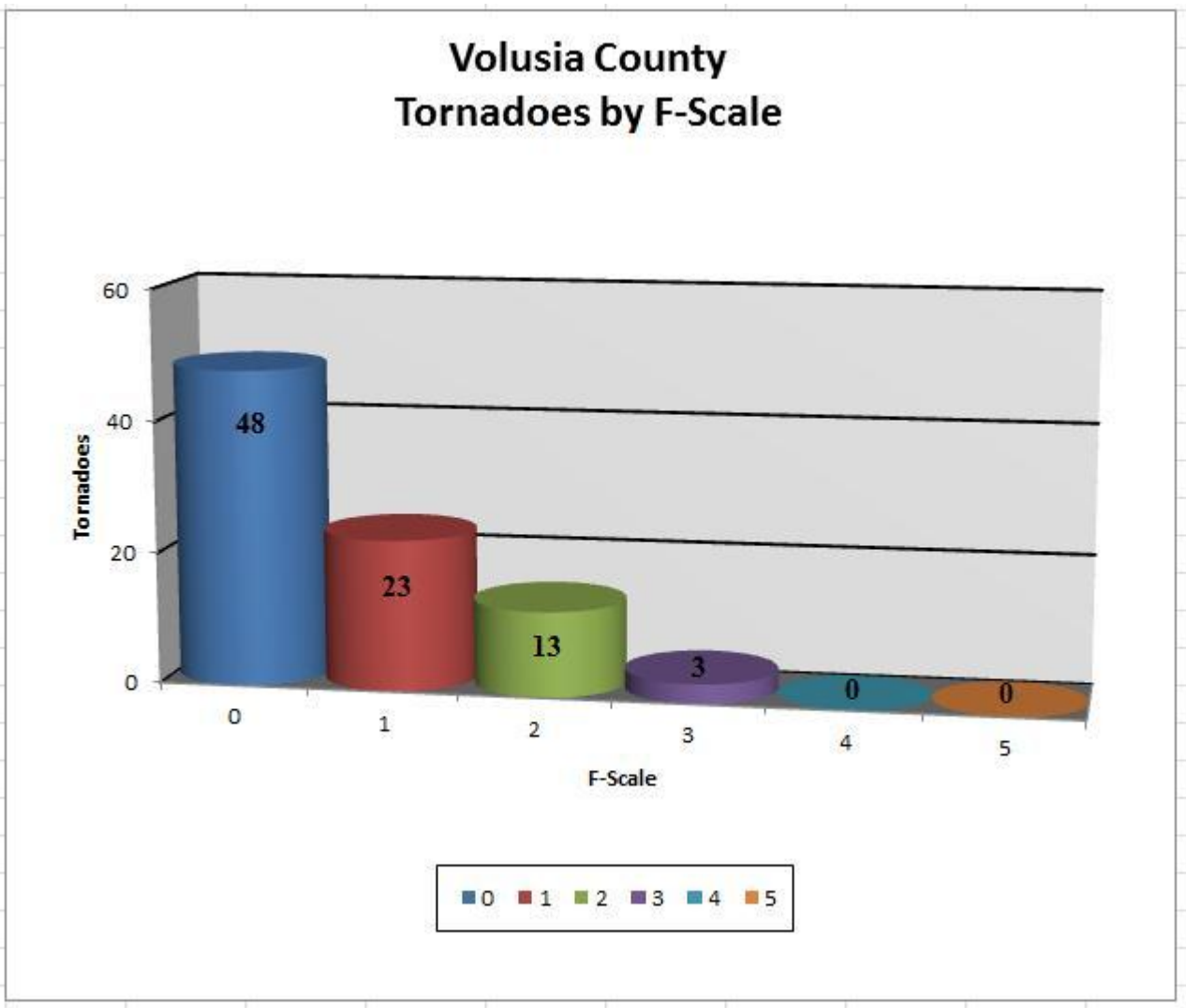

Seminole County
Monthly Distribution of Tornadoes
Number of Tornadoes
0
1
2
3
4
5
6
3
3
4
2
1
5
3
1
2
0
2
1
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Tornadoes

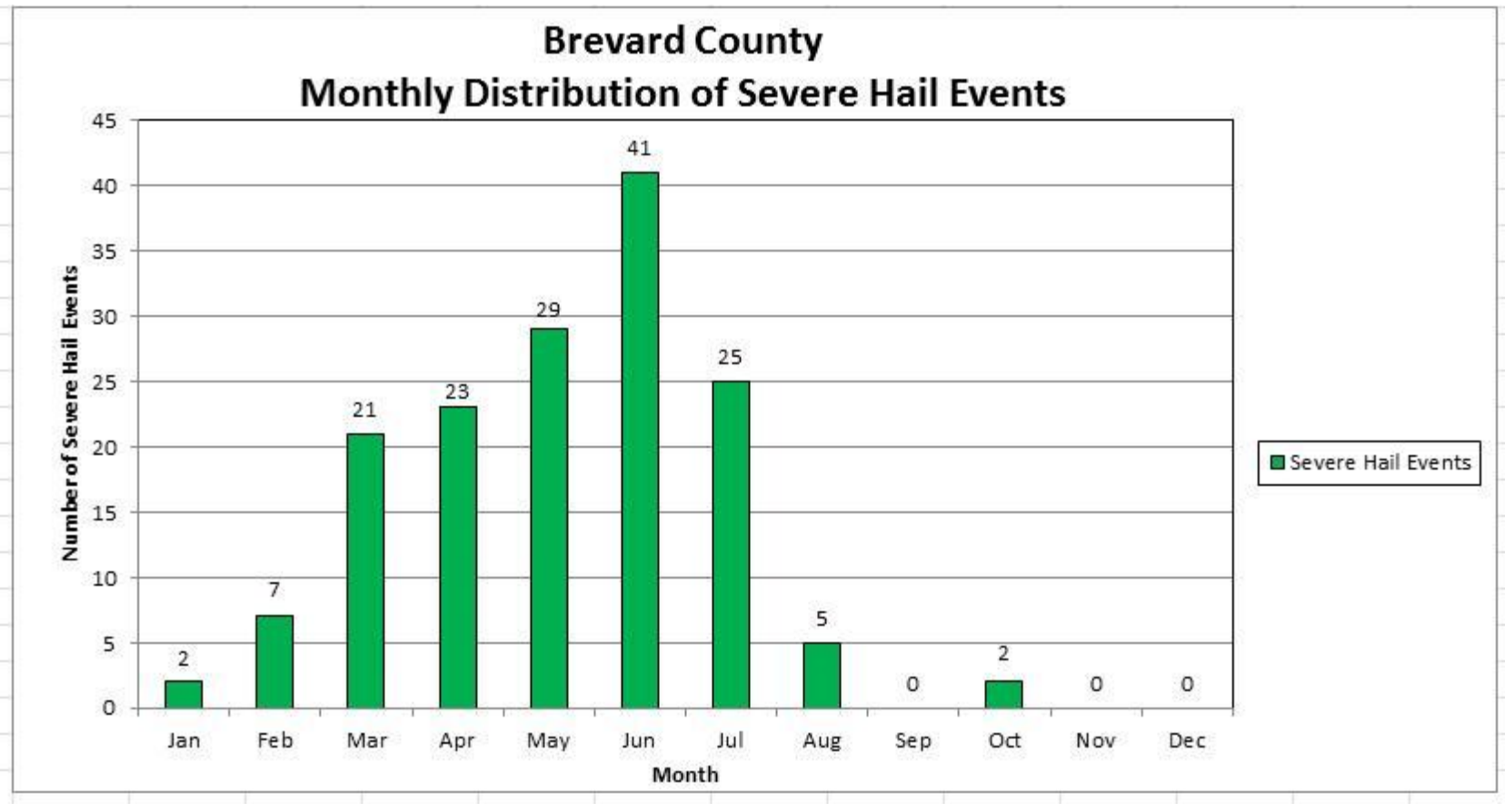

Seminole County
Tornadoes by F-Scale
Tornadoes
0
5
10
10
9
5
1
0
0
0
1
2
3
4
5
F-Scale
0
1
2
3
4
5

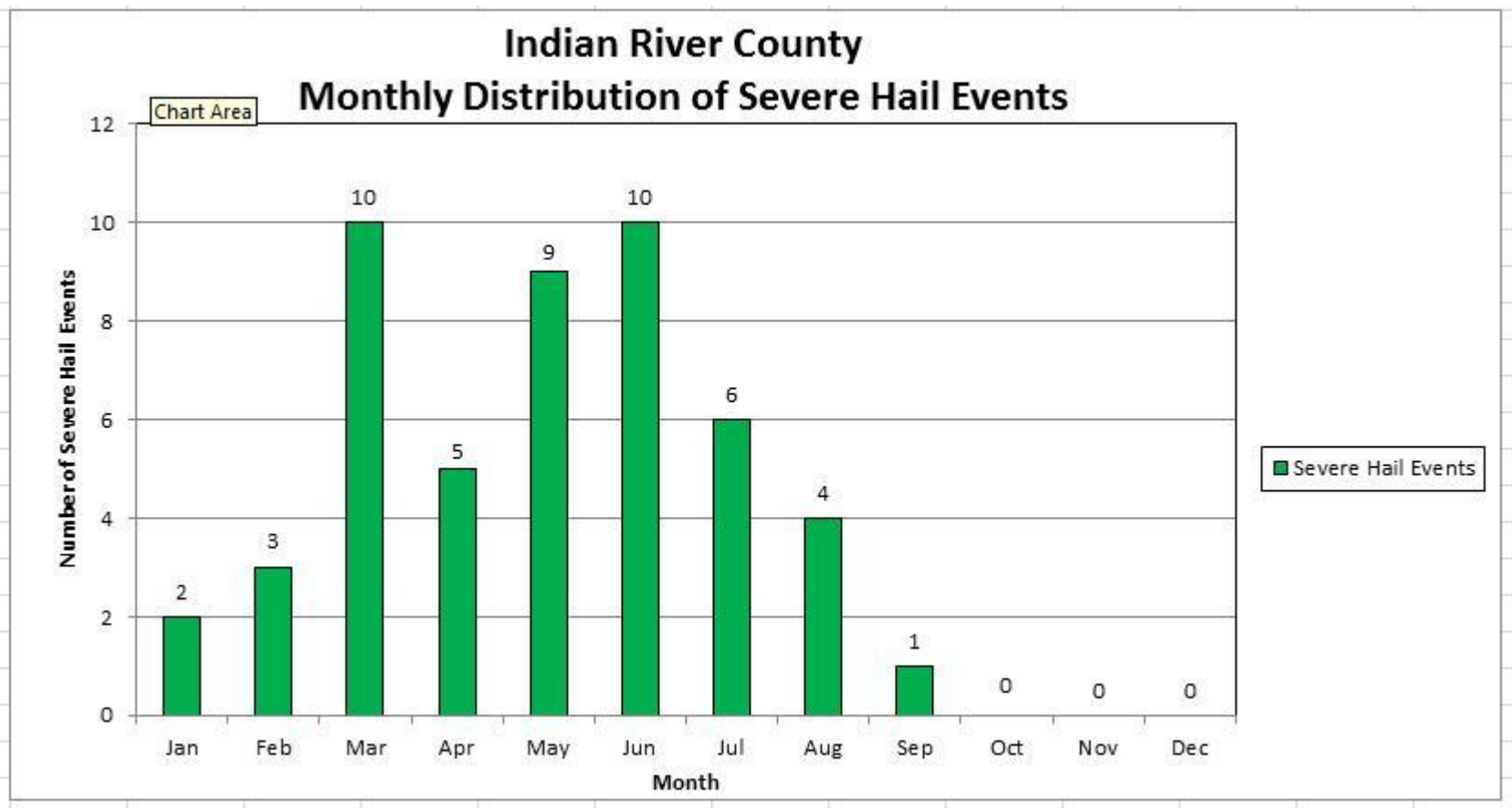

St. Lucie County
Monthly Distribution of Tornadoes
Number of Tornadoes
0
2
4
6
8
10
12
14
1
1
2
4
3
5
5
12
2
1
0
1
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Tornadoes

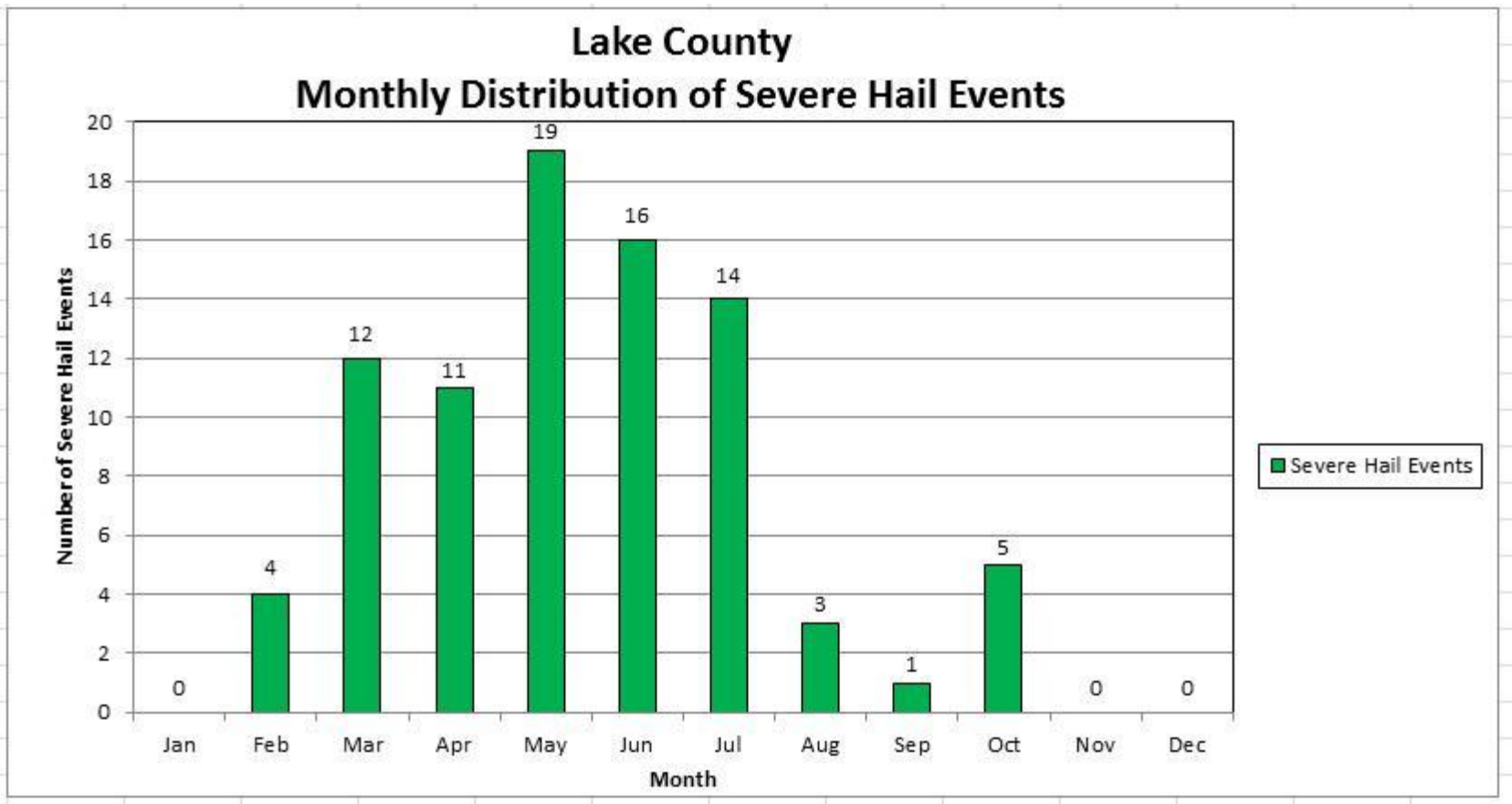

St. Lucie County
Tornadoes by F-Scale
Plot Are
Tornadoes
0
20
40
25
7
2
2
0
0
0
1
2
3
4
5
F-Scale
0
1
2
3
4
5

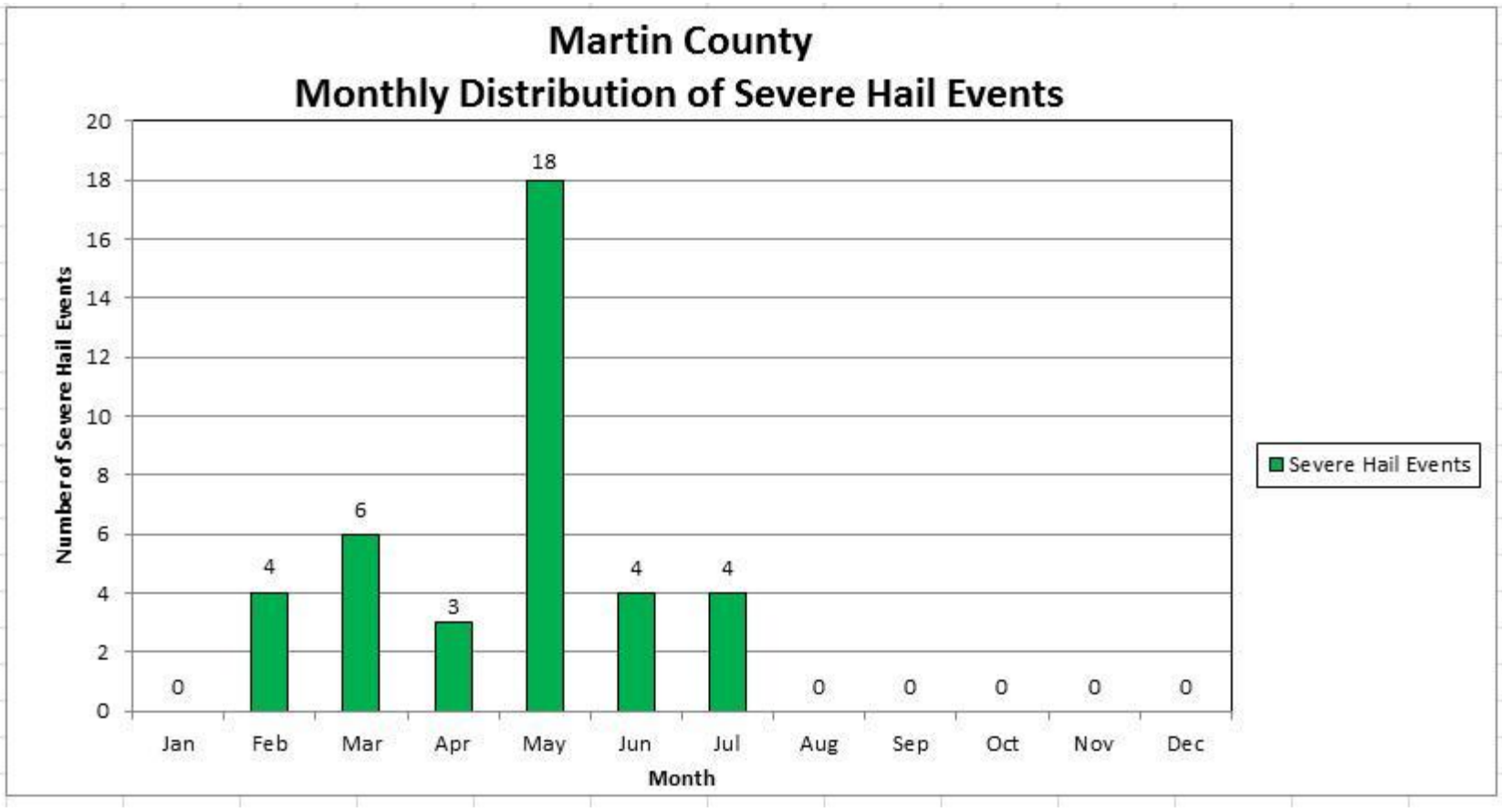

Volusia County
Monthly Distribution of Tornadoes
Number of Tornadoes
16
14
12
10
8
6
4
2
0
4
8
4
14
10
7
14
14
9
6
5
2
Plot Area
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Tornadoes

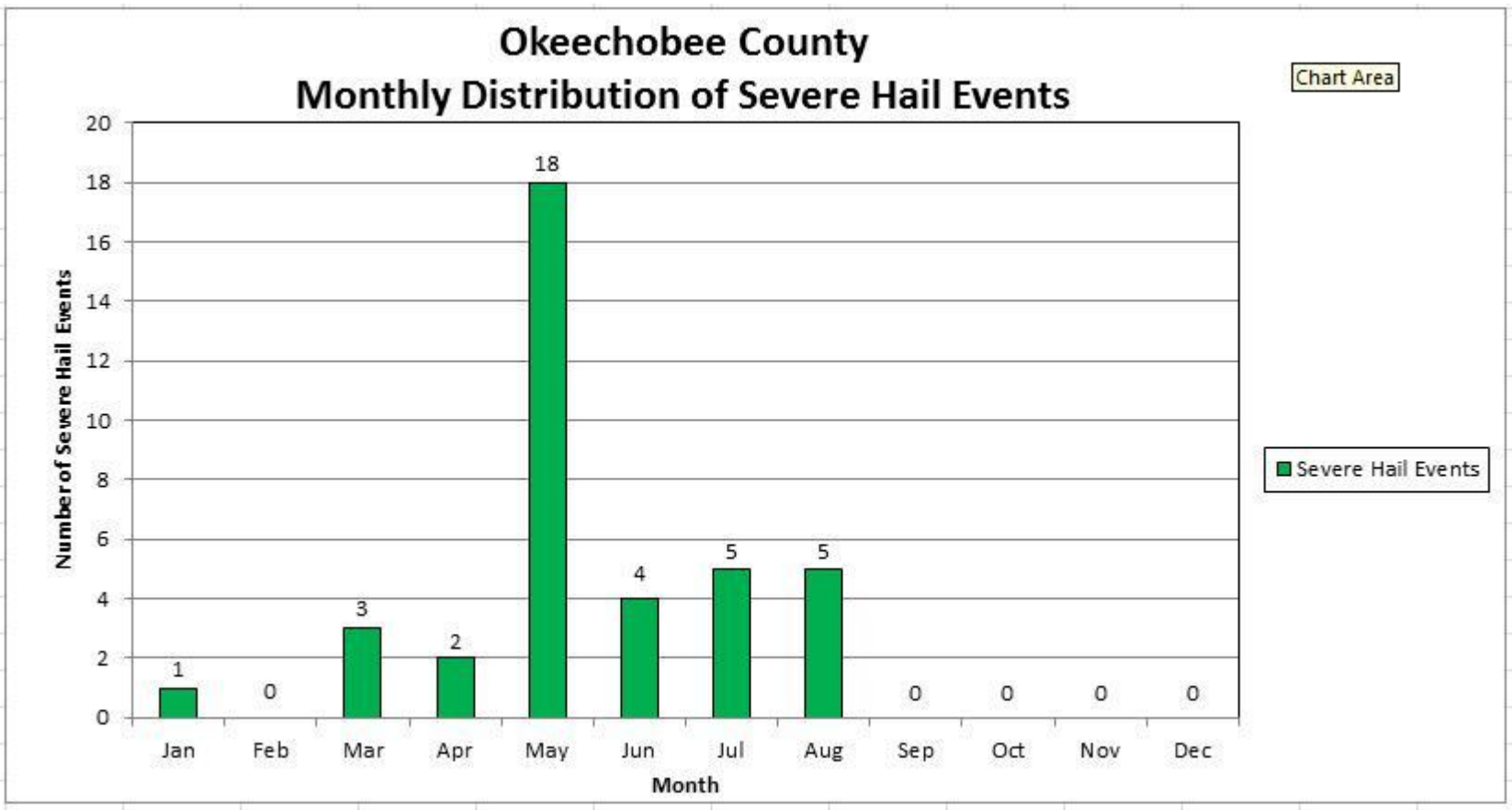

Volusia County
Tornadoes by F-Scale
Tornadoes
60
40
20
0
48
23
13
3
0
0
0
1
2
3
4
5
F-Scale
0
1
2
3
4
5

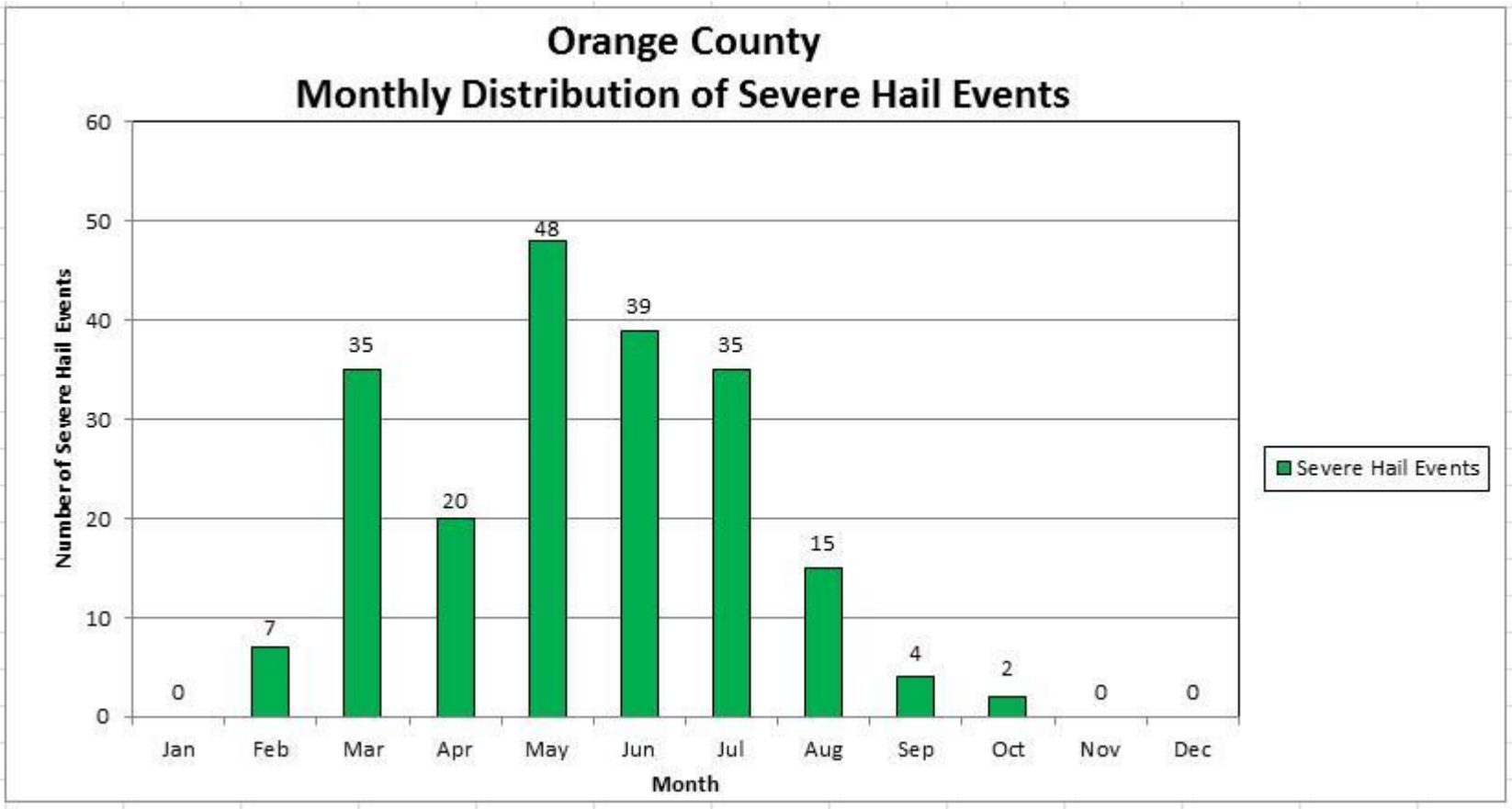

Brevard County
Monthly Distribution of Severe Hail Events
Number of Severe Hail Events
45
40
35
30
25
20
15
10
5
0
2
7
21
23
29
41
25
5
0
2
0
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Hail Events

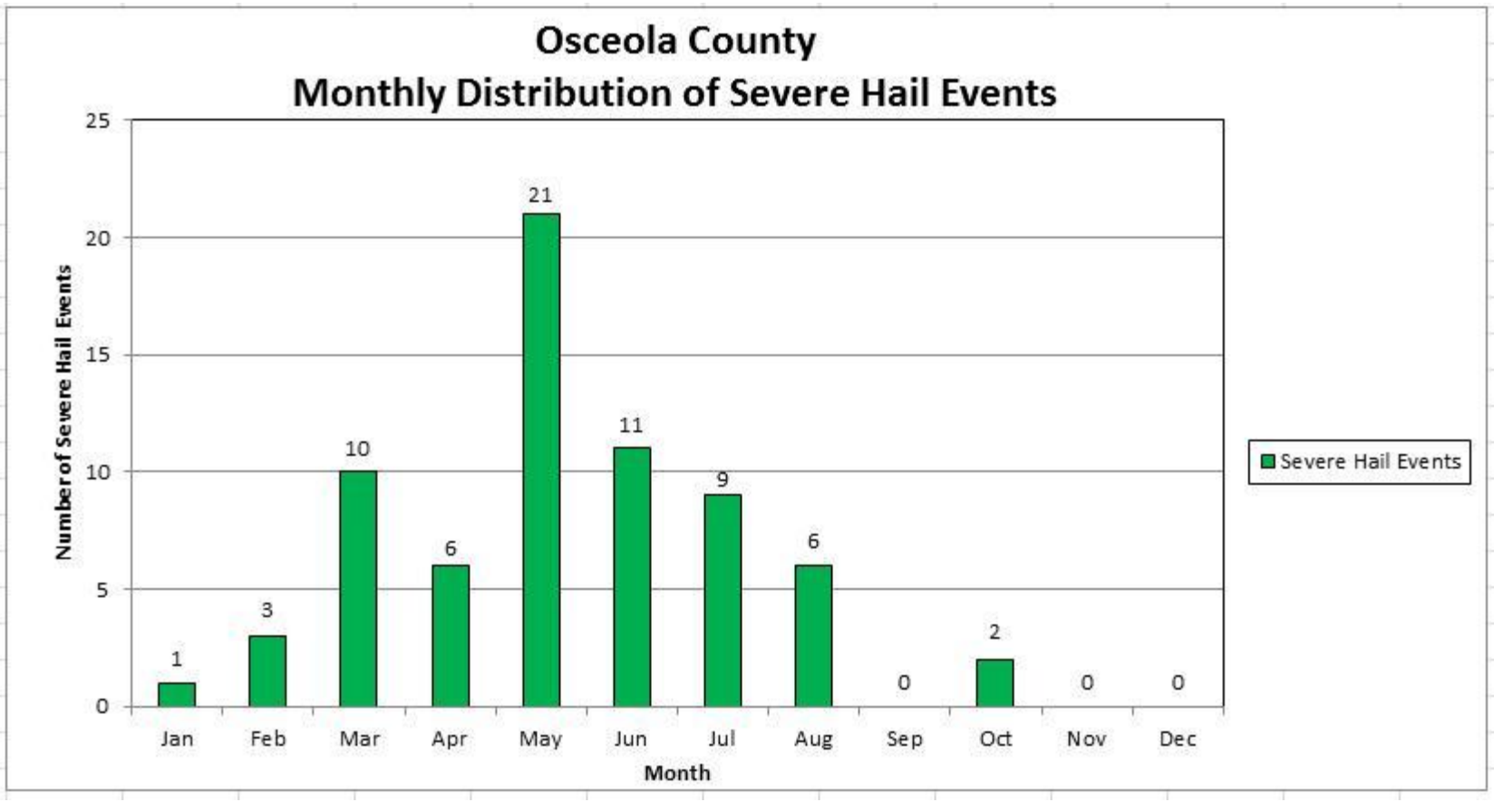

Indian River County
Monthly Distribution of Severe Hail Events
Chart Area
Number of Severe Hail Events
12
10
8
6
4
2
0
2
3
10
5
9
10
6
4
1
0
0
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Hail Events


Lake County
Monthly Distribution of Severe Hail Events
Number of Severe Hail Events
20
18
16
14
12
10
8
6
4
2
0
0
4
12
11
19
16
14
3
1
5
0
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Hail Events

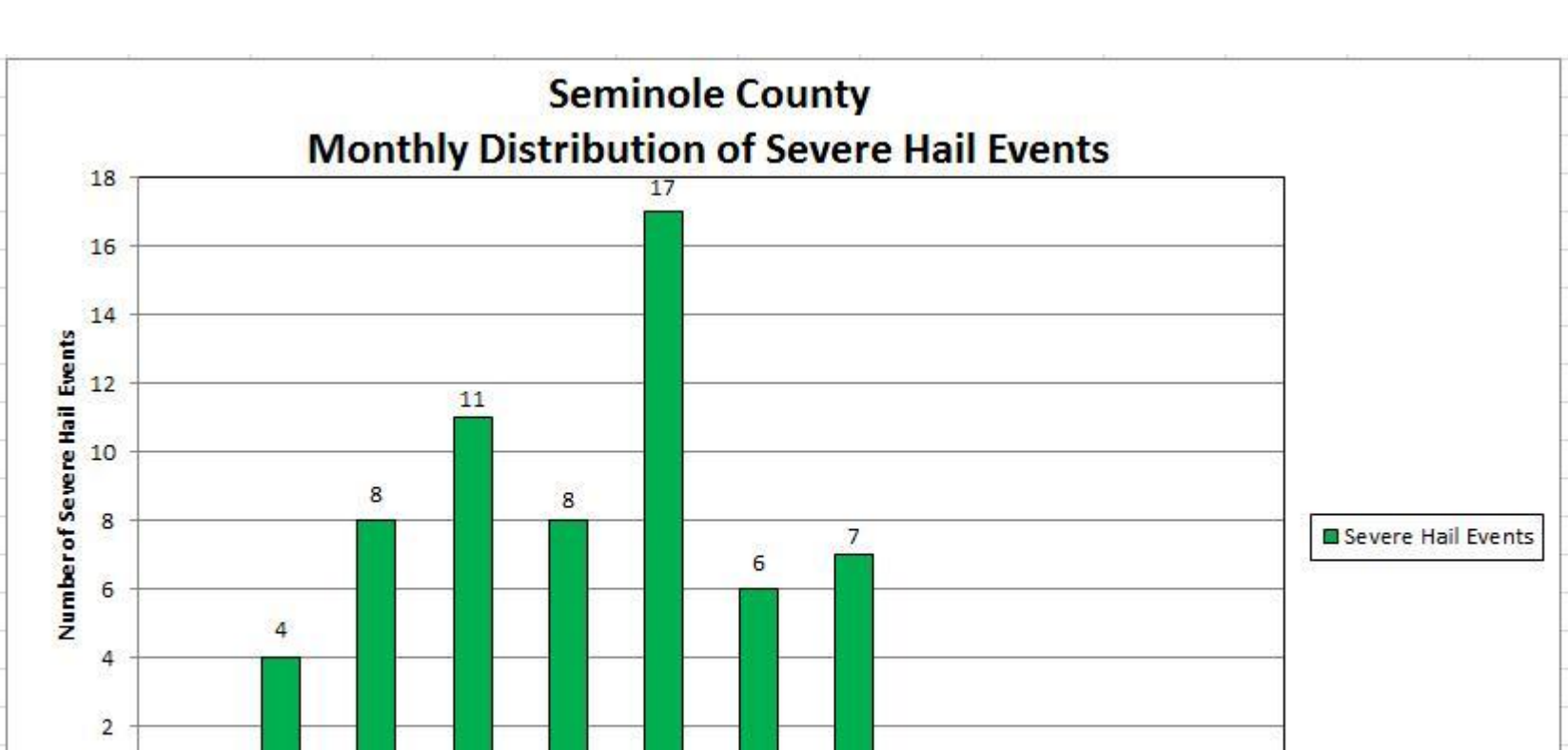

Martin County
Monthly Distribution of Severe Hail Events
Number of Severe Hail Events
Month
Severe Hail Events
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
0
4
6
3
18
4
4
0
0
0
0
0

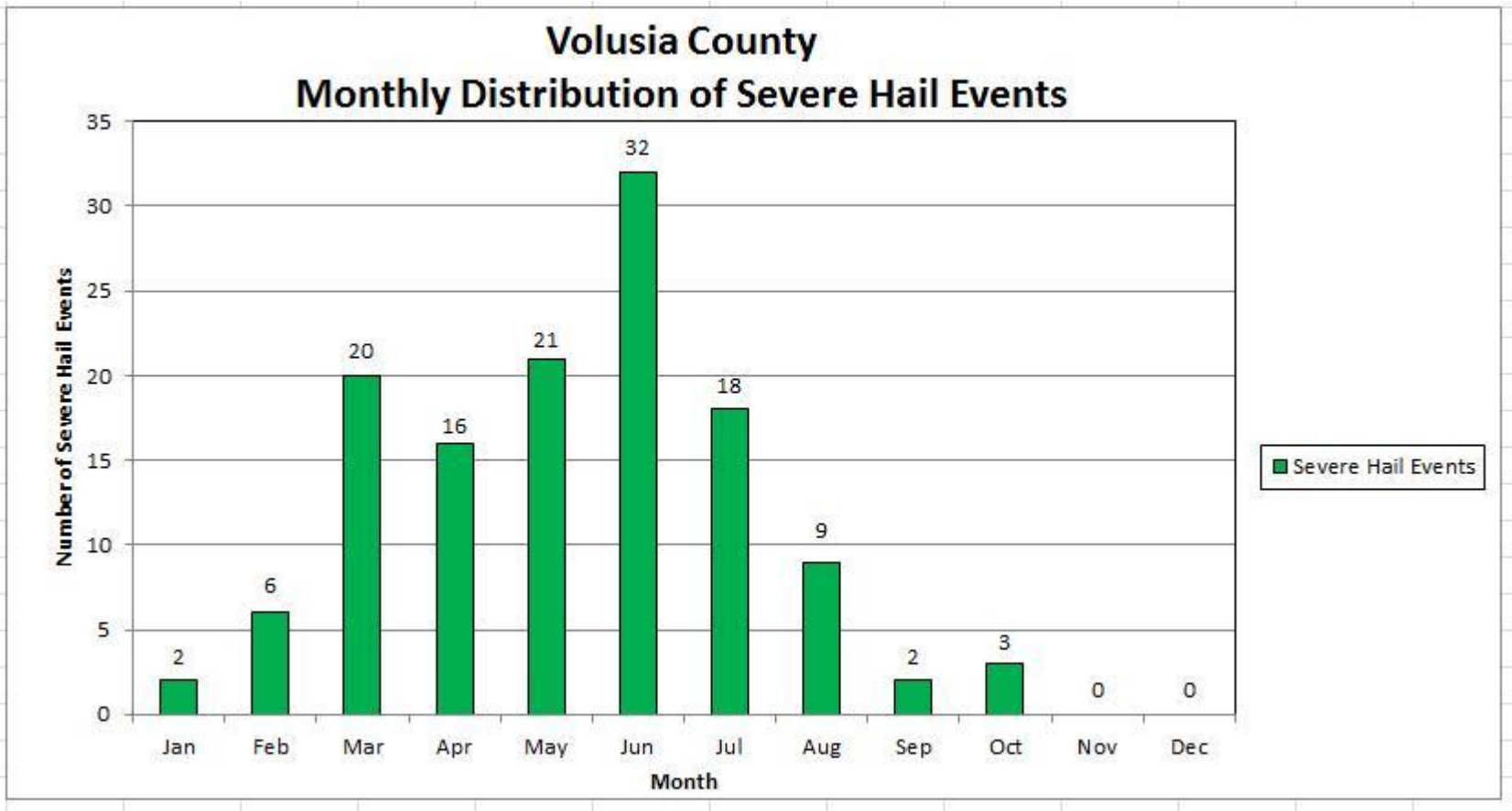

Okeechobee County
Monthly Distribution of Severe Hail Events
Chart Area
Number of Severe Hail Events
Month
Severe Hail Events
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
1
0
3
2
18
4
5
5
0
0
0
0

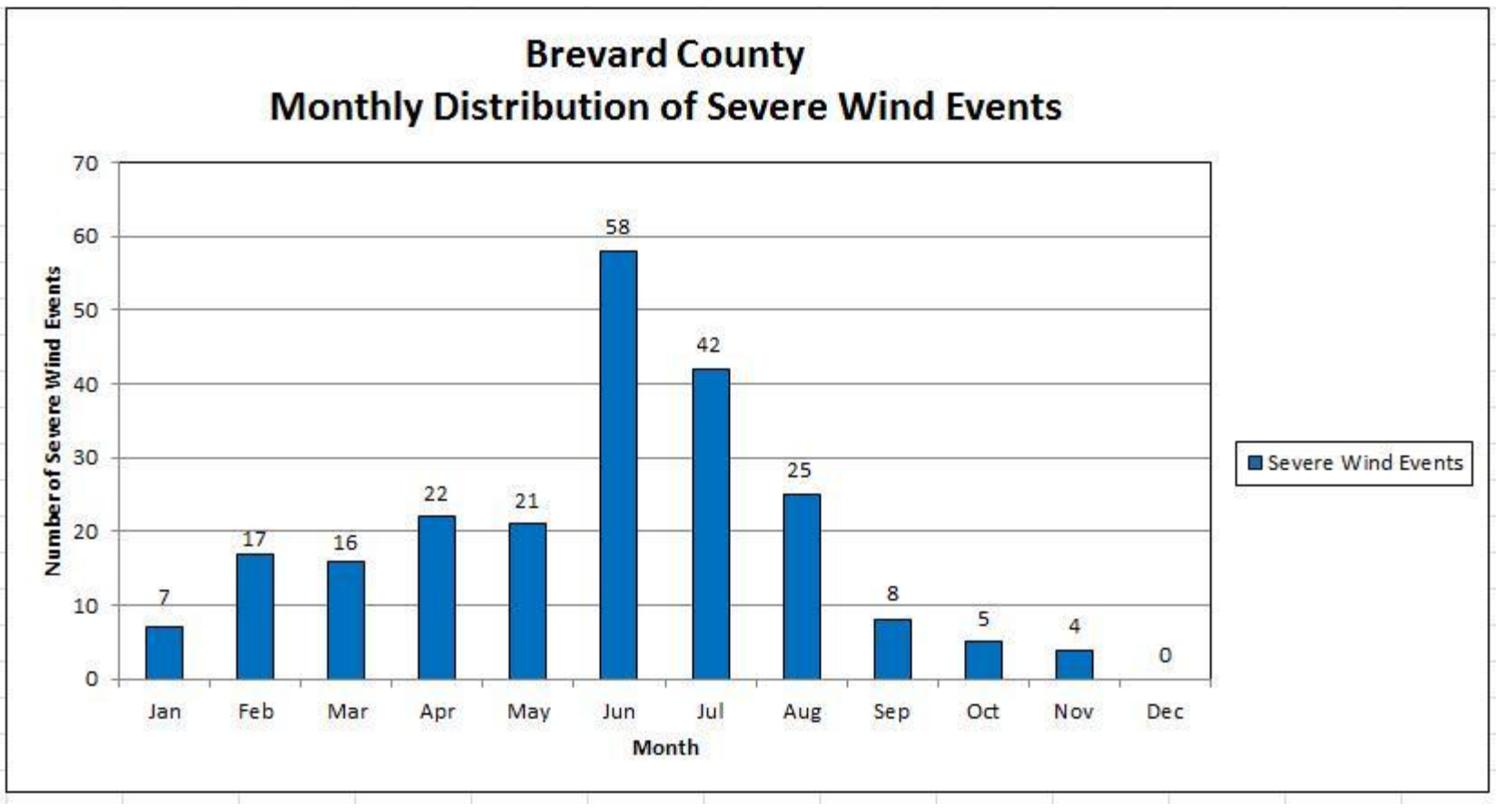

Orange County
Monthly Distribution of Severe Hail Events
Number of Severe Hail Events
Month
Severe Hail Events
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
0
7
35
20
48
39
35
15
4
2
0
0


Osceola County
Monthly Distribution of Severe Hail Events
Number of Severe Hail Events
Month
Severe Hail Events
Jan 1
Feb 3
Mar 10
Apr 6
May 21
Jun 11
Jul 9
Aug 6
Sep 0
Oct 2
Nov 0
Dec 0

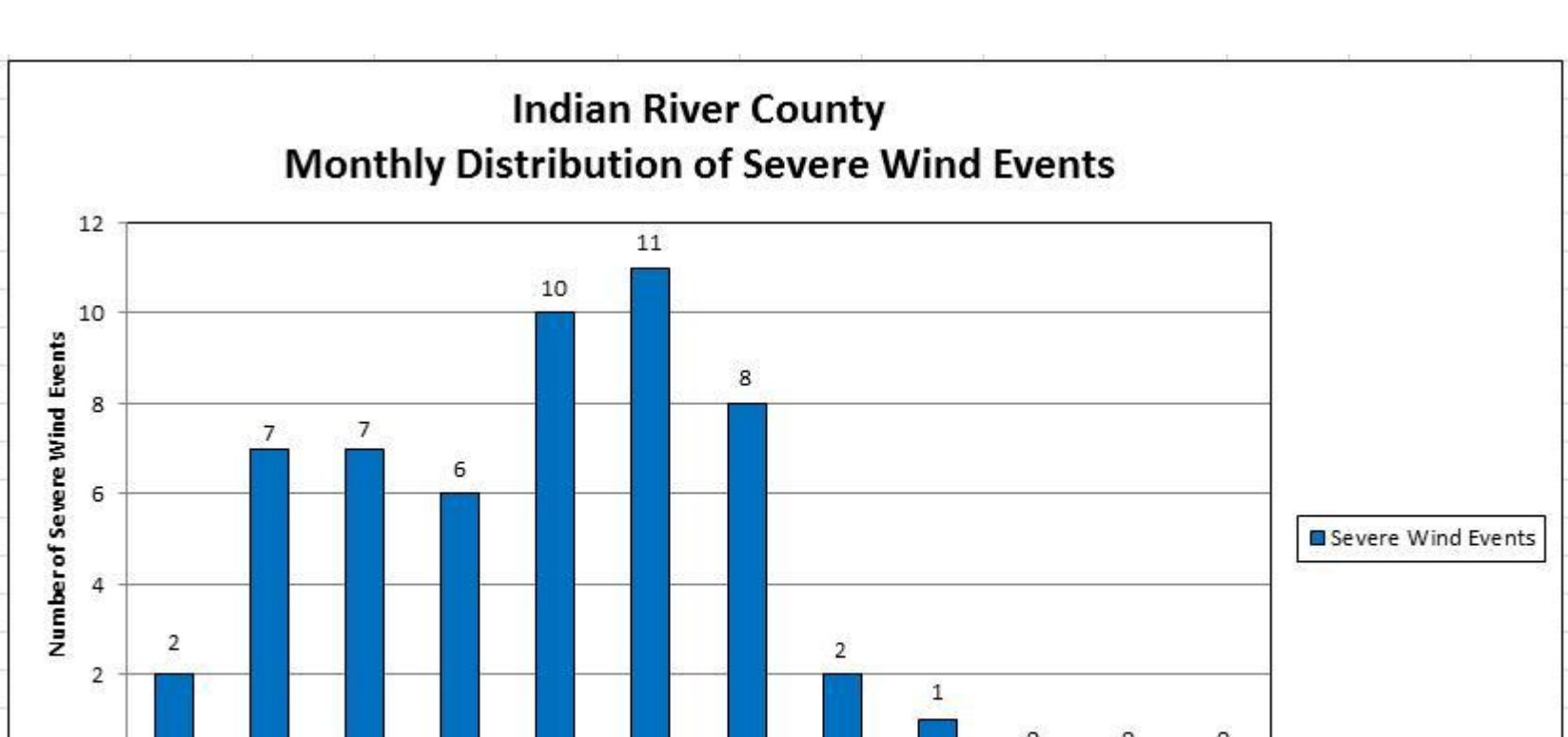
Seminole County
Monthly Distribution of Severe Hail Events
Number of Severe Hail Events
Month
Severe Hail Events
Jan 0
Feb 4
Mar 8
Apr 11
May 8
Jun 17
Jul 6
Aug 7
Sep 0
Oct 0
Nov 0
Dec 0

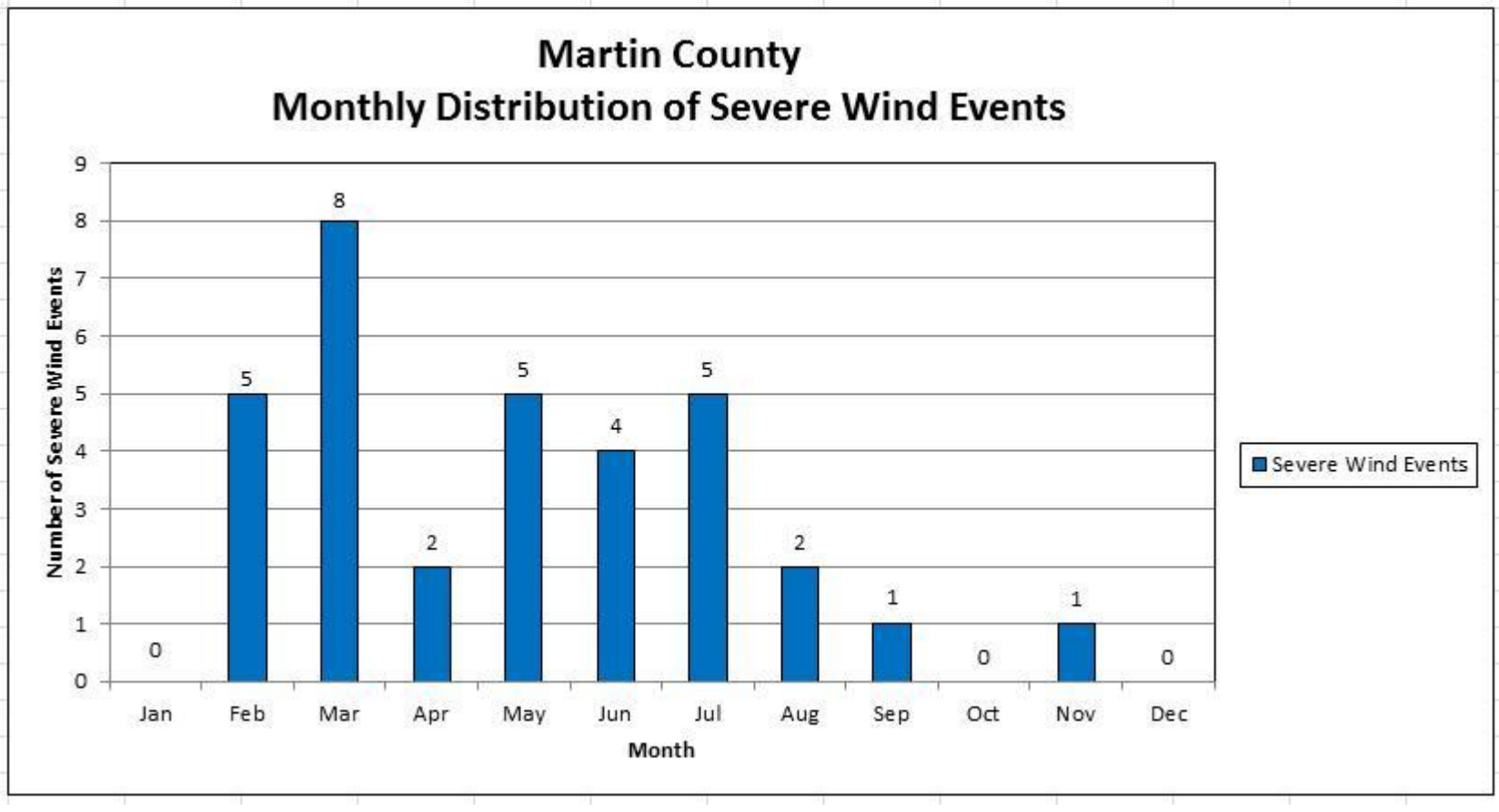

St. Lucie County
Monthly Distribution of Severe Hail Events
Number of Severe Hail Events
Month
Severe Hail Events
Jan 0
Feb 2
Mar 6
Apr 3
May 20
Jun 11
Jul 3
Aug 3
Sep 0
Oct 1
Nov 0
Dec 0


Volusia County
Monthly Distribution of Severe Hail Events
Number of Severe Hail Events
35
30
25
20
15
10
5
0
2
6
20
16
21
32
18
9
2
3
0
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Hail Events

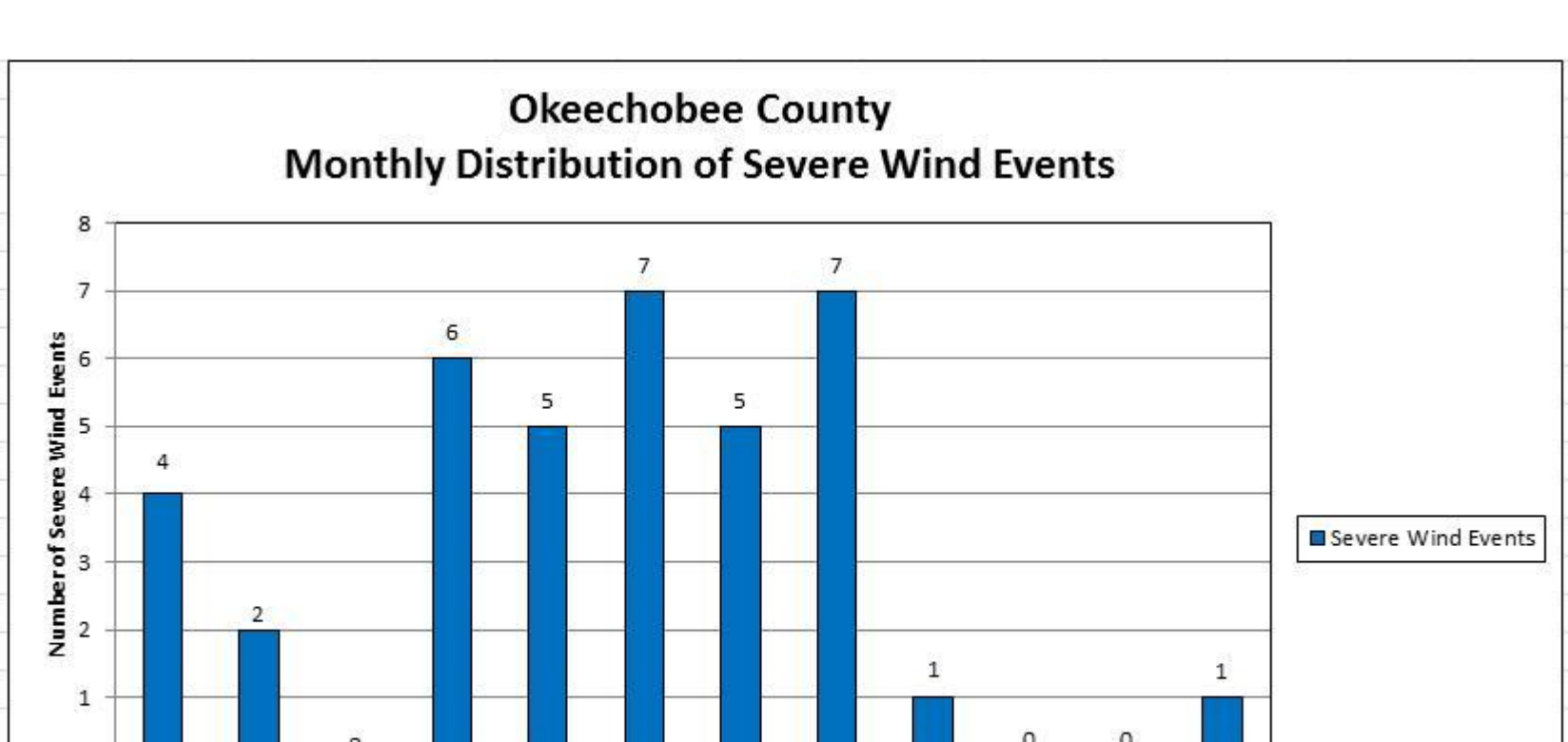

Brevard County
Monthly Distribution of Severe Wind Events
Number of Severe Wind Events
70
60
50
40
30
20
10
0
7
17
16
22
21
58
42
25
8
5
4
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Wind Events

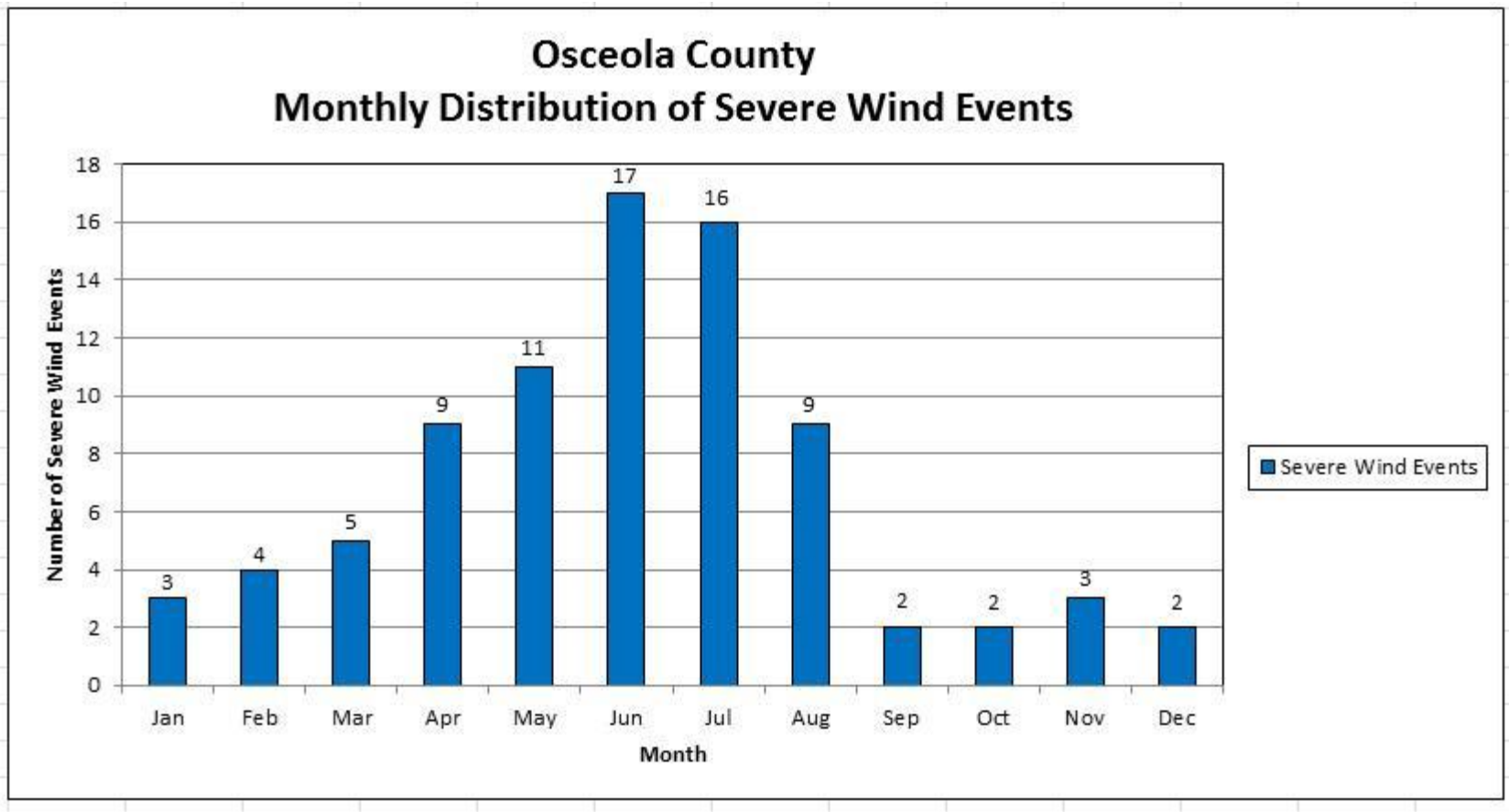
Indian River County
Monthly Distribution of Severe Wind Events
Number of Severe Wind Events
12
10
8
6
4
2
0
2
7
7
6
10
11
8
2
1
0
0
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Wind Events

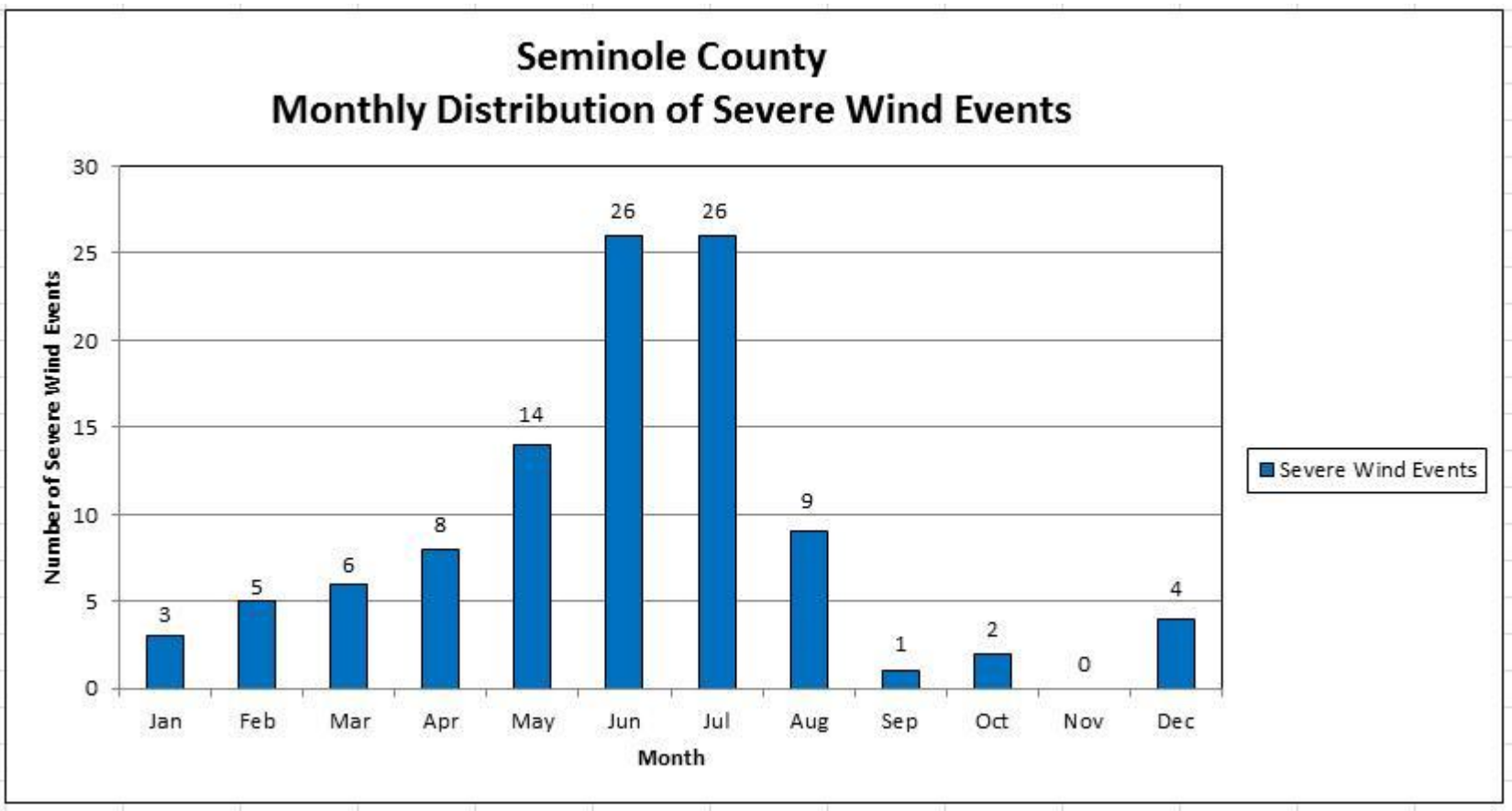

Lake County
Monthly Distribution of Severe Wind Events
Number of Severe Wind Events
25
20
15
10
5
0
3
7
6
14
9
21
16
17
3
4
1
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Wind Events

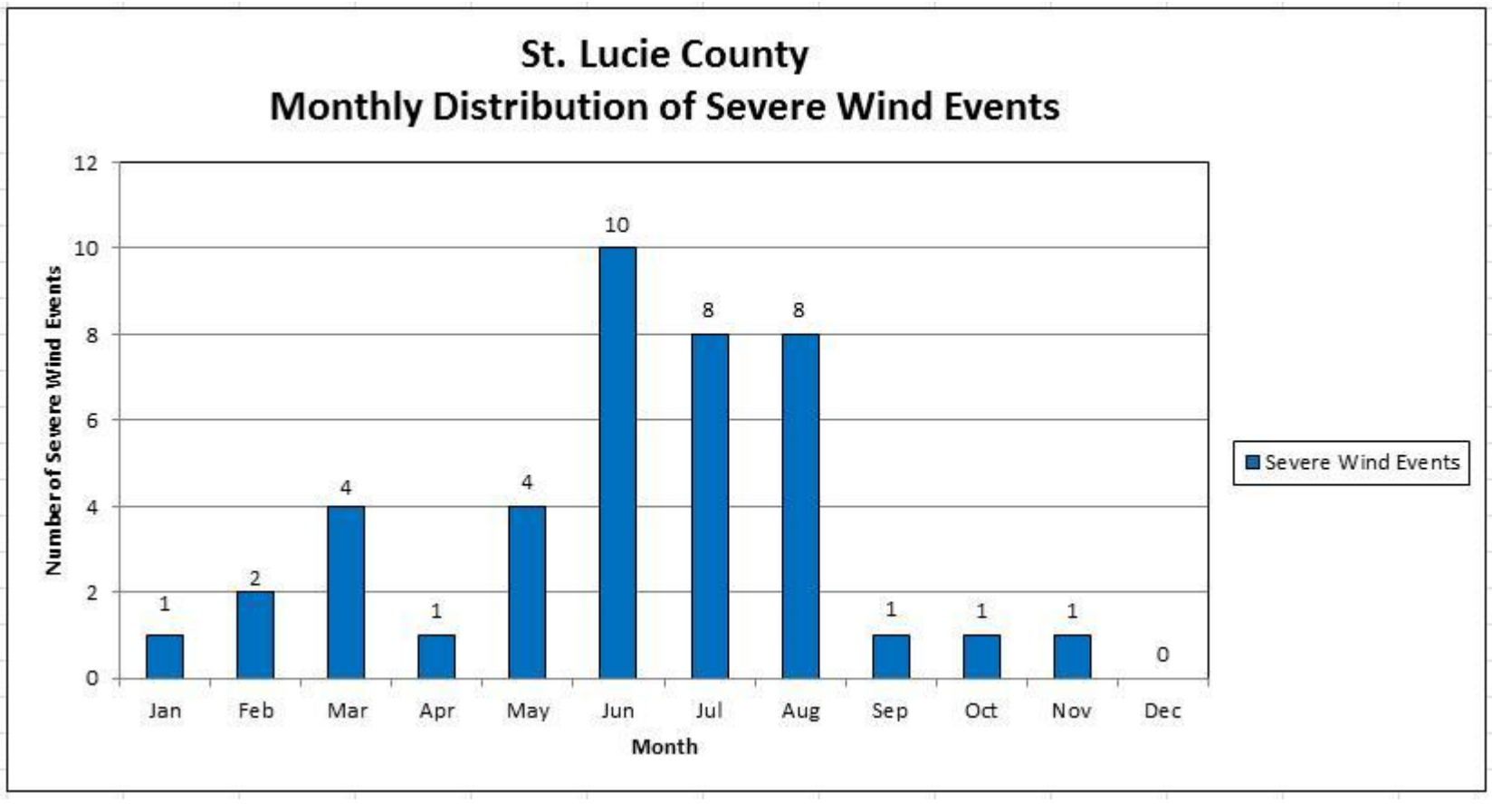

Martin County
Monthly Distribution of Severe Wind Events
Number of Severe Wind Events
0
1
2
3
4
5
6
7
8
9
0
5
8
2
5
4
5
2
1
0
1
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Wind Events

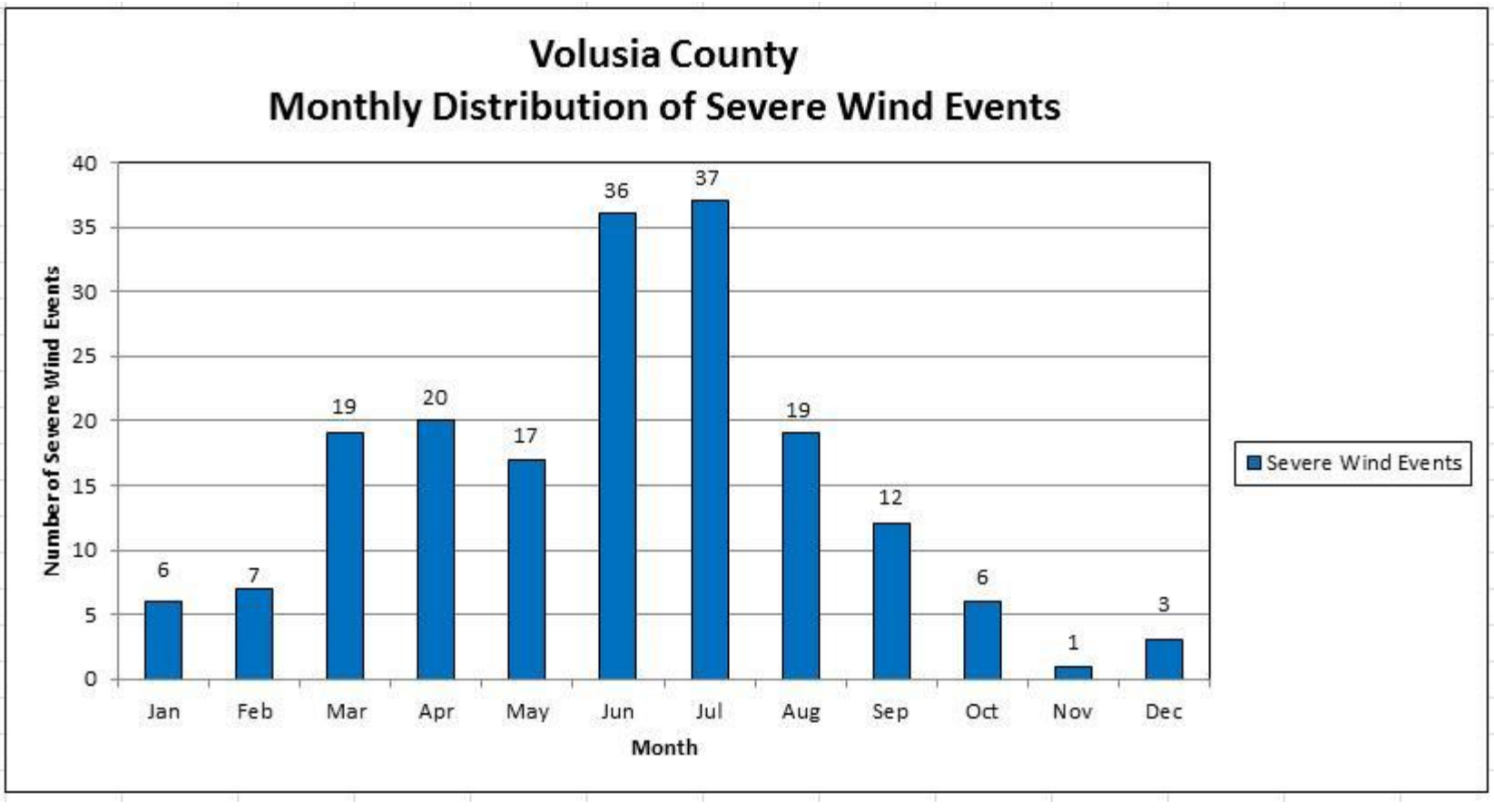
Okeechobee County
Monthly Distribution of Severe Wind Events
Number of Severe Wind Events
0
1
2
3
4
5
6
7
8
4
2
0
6
5
7
5
7
1
0
0
1
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Wind Events


Orange County
Monthly Distribution of Severe Wind Events
Number of Severe Wind Events
0
10
20
30
40
50
60
3
10
14
16
23
54
46
23
7
4
3
4
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Wind Events


Osceola County
Monthly Distribution of Severe Wind Events
Number of Severe Wind Events
0
2
4
6
8
10
12
14
16
18
3
4
5
9
11
17
16
9
2
2
3
2
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Wind Events


Seminole County
Monthly Distribution of Severe Wind Events
Number of Severe Wind Events
0
5
10
15
20
25
30
3
5
6
8
14
26
26
9
1
2
0
4
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Wind Events


St. Lucie County
Monthly Distribution of Severe Wind Events
Number of Severe Wind Events
0
2
4
6
8
10
12
1
2
4
1
4
10
8
8
1
1
1
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Severe Wind Events



For any questions pertaining to this study on East Central Florida severe weather, please email: Jonathan.Guseman@noaa.gov or Scott.Spratt@noaa.gov